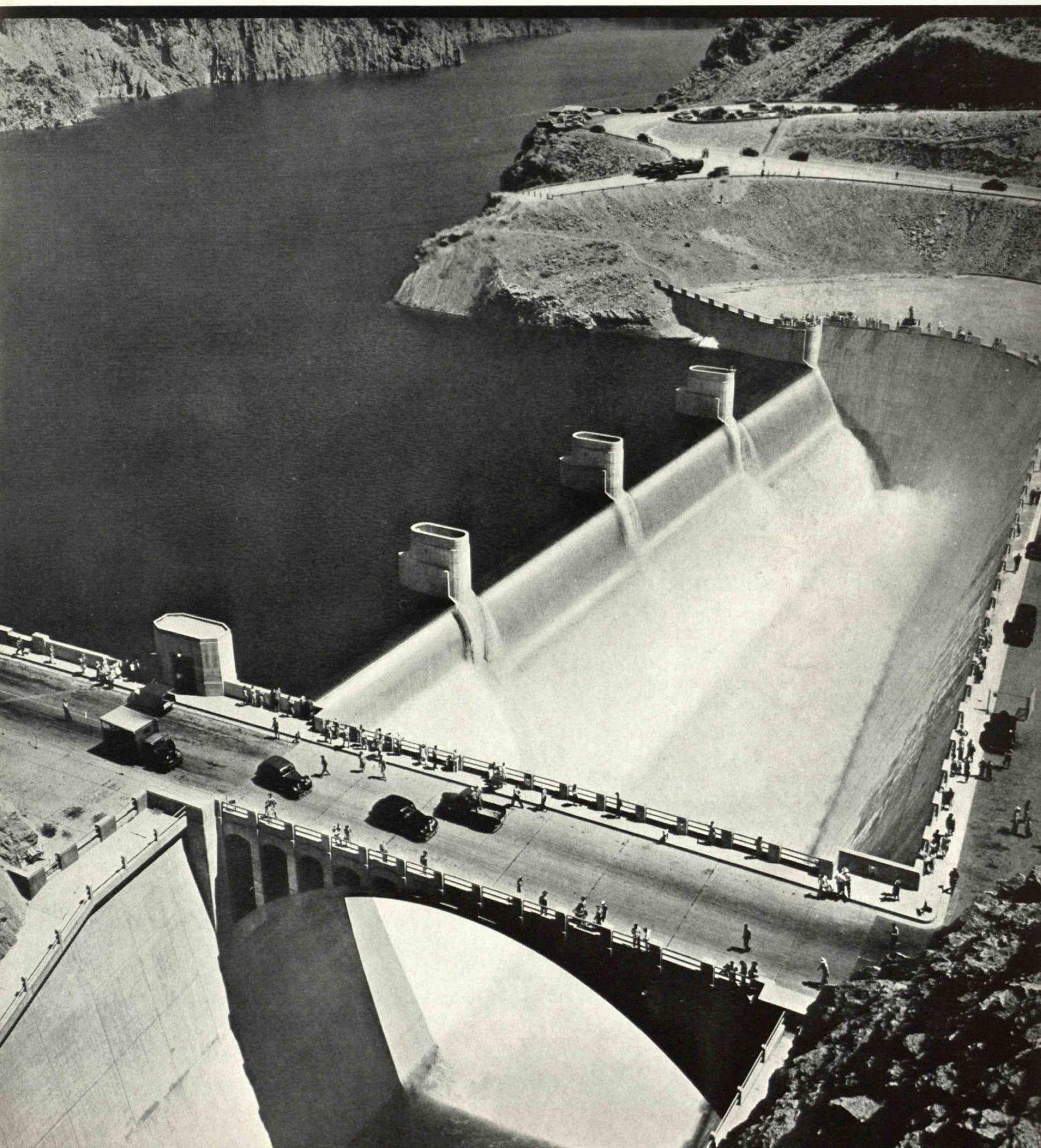


April 1942

# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



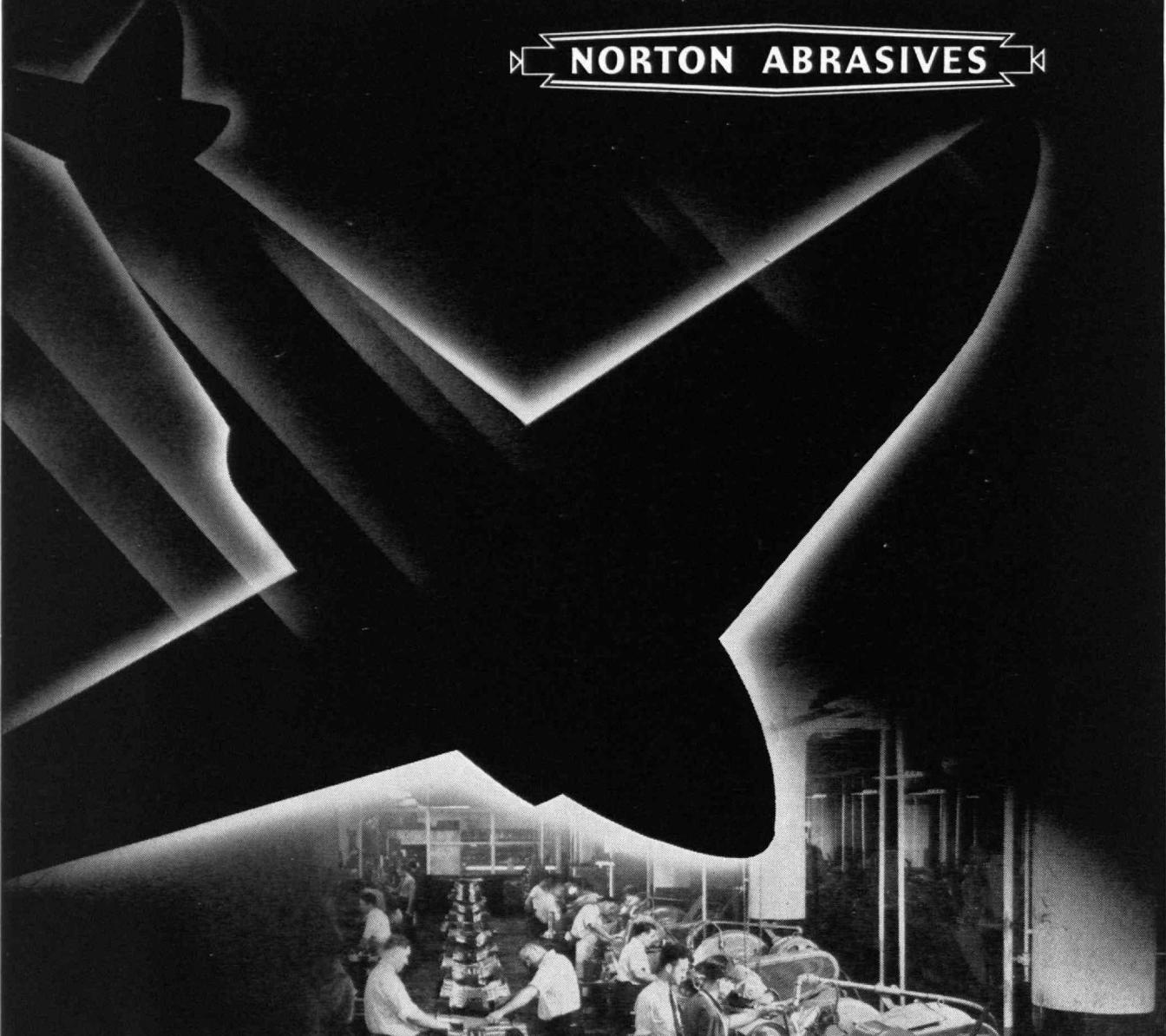
# technology review

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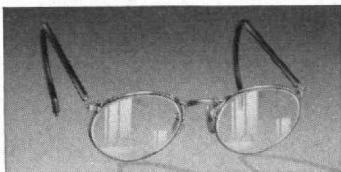
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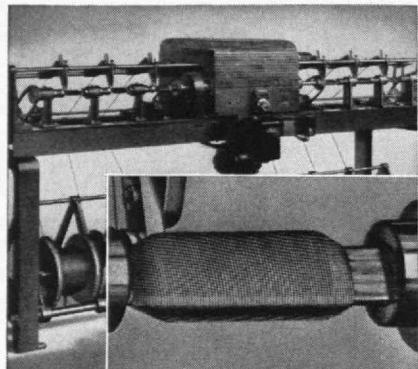


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**FIDELITY SPOOLING MACHINE**, hydraulic control, winds six wedge-end or barrel-shaped packages, on flat or square sticks. Machine has six winding units driven from a center head. Traverse . . . length governed by electrically controlled valves . . . changed by attachment which automatically shortens traverse for each succeeding layer of wire. Automatic yardage meter. Winds from spools or brake-controlled reels.



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Write for illustrated bulletin on **FIDELITY Spooling Machines**.

## FIDELITY QUILL WINDER

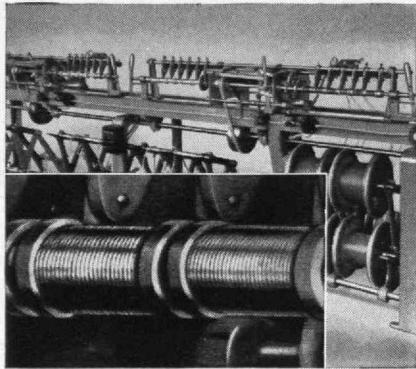
**FIDELITY QUILL WINDER** for weaving wire cloth. Accurate high-speed taper winding. Winds six packages at a time—uniform, even, lay and taper. Taper automatically controlled and traverse reversed. Smooth acceleration prevents wire stretch and breakage. Hydraulic control, individual motor drive, tension control on feeder, yardage meter. Winds wire from spools or brake-controlled reels. Write for further information and details.

### Specifications FIDELITY QUILL WINDER

1. Spindle speed, 1750 R.P.M.
2. Six quills wound simultaneously
3. Maximum traverse, 10 inches
4. Dial control for traverse changes
5. Automatic stop motion
6. Automatic angular winding attachment
7. Automatic yardage meter
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9. Push-button control
10.  $\frac{1}{4}$  HP motor
11. 2' x 13½' floor space

**FIDELITY DOUBLE-END SCREW TRAVERSE SPOOLER**, winds conventional type spools from reels. Units can be operated independently for different kind and number of spools. Individual yardage meters, stop motion synchronized by electrical control and supply reel brakes. Detachable spindle ends removed by pulling vertical lever located outside end bearings. Change gears accessible for different wire spacing.

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## FIDELITY SINFRA TRIPLE-HEAD WIRE COVERING MACHINE

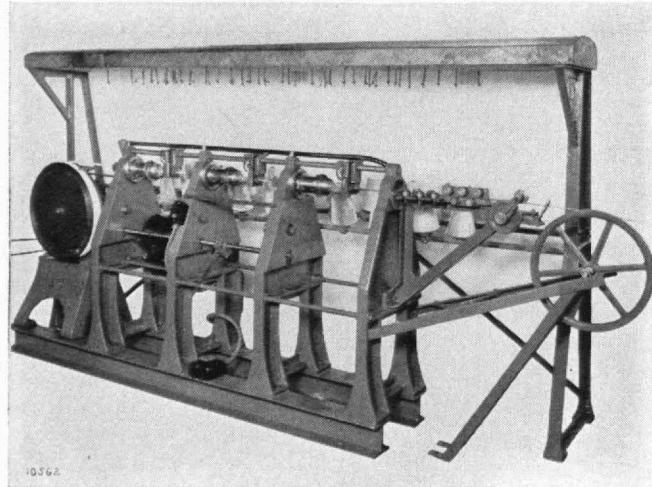
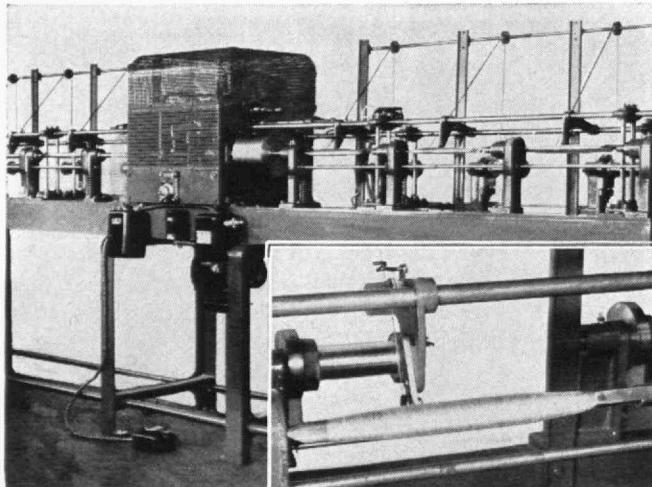
**THREE KNITTING HEADS** in series, each knits one cotton covering on wire up to #6 gauge—bare or rubber covered—at 1200 to 1500 feet per hour.

Wire fed over straightening rolls through knitting heads—covered wire then passes on to 20" or 36" capstan take-off. Separate haul-off reel stand—maximum 40" O. D. 40" traverse, 1000 lb. capacity.

Automatic electric stop-motion on each yarn—improved knitting head and needle design—knits direct from large cones—quiet operation reduces operator fatigue—speeds output.

Also available—Single-Head Type for knitting single cover. Write for details.

SPECIFICATIONS FIDELITY Sinfra Triple-Head Wire Covering Machine	
No. Covers Knitted	3
Rate of Production	1200'-1500' per hour
Size of Wire Covered	Up to #6 Gauge Bare Copper Wire
Power	1 H.P.
Floor Space (Knitting Unit)	12' x 4'
Haul-off Reel Capacity	Max. 1000 lb. Max. 40" O.D.—40" Traverse
Yarn	Knit Directly from Large Cones



Builders of Machinery for: KNITTING • BRAIDING • WINDING • SPOOLING • SKEIN REELING • POCKET EDGE FOLDING • BELT LOOP AND STRAP CUTTING • WIRE COVERING • RUBBER HOSE COVERING AND REINFORCING • TEXTILE ACCESSORIES

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An inquiry will bring you the assistance of our laboratories.

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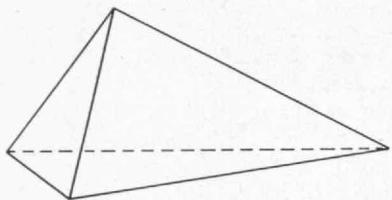
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## Just for Fun!

# A CHALLENGE

### TO YOUR INGENUITY

**WE** are passing along to you an interesting "10 minute" problem which we received from our friend, Mr. John A. Dickinson, of the National Bureau of Standards. He says that his Descriptive Geometry teacher used



to use it to test the ability of students to visualize constructions in three dimensions.

Pass a plane through an arbitrarily proportioned tetrahedron (shown above) in such a way that the intersection will be a parallelogram.

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## THE TABULAR VIEW

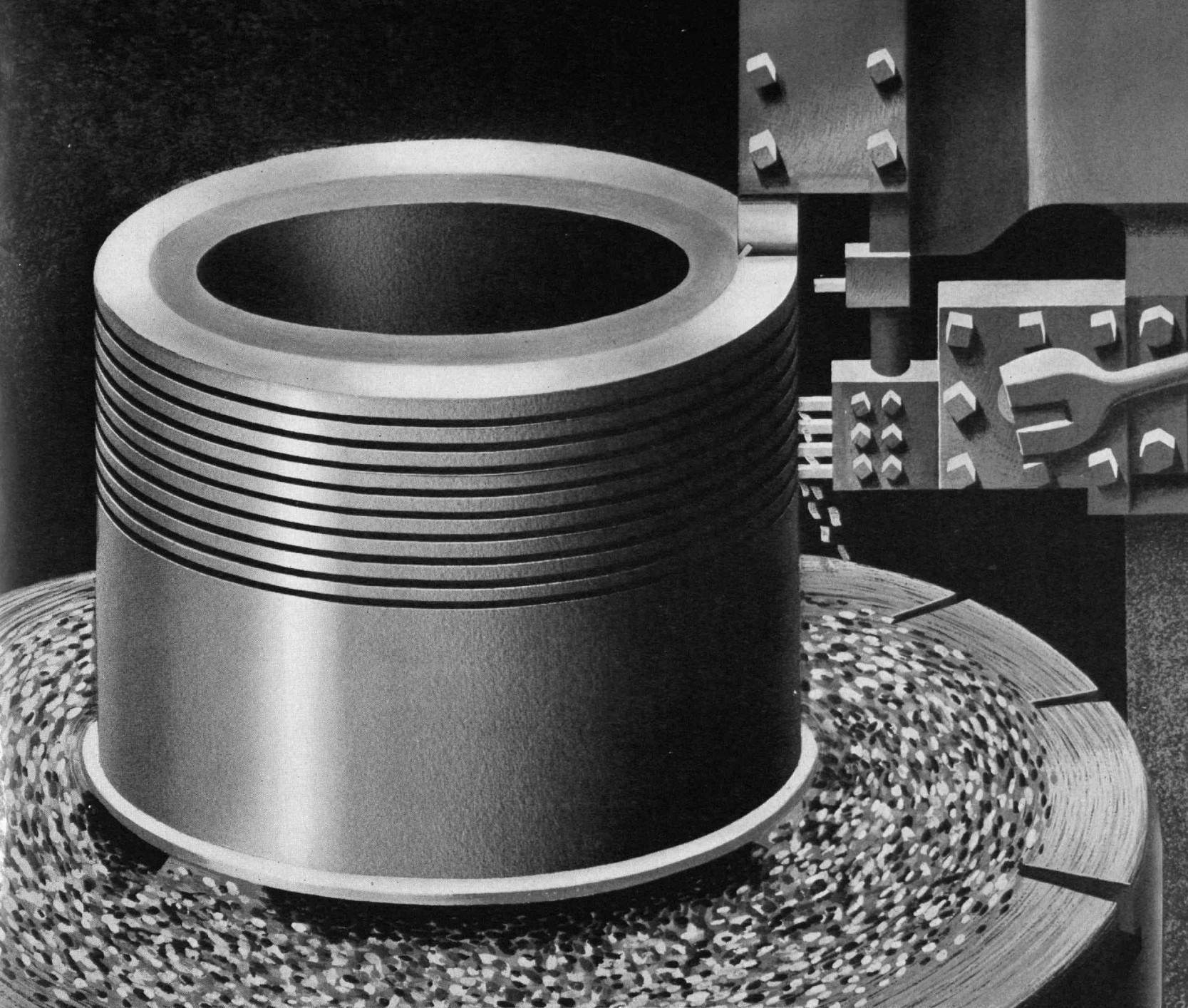
**Potent.** — In few activities is the essential unity of science finding stronger expression than in the concentration of techniques from many fields on the solution of fundamental problems in biology. FRANCIS O. SCHMITT, Professor of Biology and in charge of the Course in Biophysics and Biological Engineering, makes plain the implications of this fact in a survey (page 263) of current questions in biology and of work now being done on some of them at Technology. Dr. Schmitt's own many accomplishments in utilizing the resources of associated branches of science give his article especial interest.

**Panel.** — Editor of our able contemporary, the *Tech Engineering News*, in his undergraduate days, ALBERT G. DIETZ, '32, Assistant Professor of Structural Engineering, has since continued journalistic endeavor, expressing it in this Review (page 266) in a discussion of housing problems. He presents a philosophy originally proposed by Ross F. Tucker, '92, who organized the Institute's Department of Building Engineering and Construction, of which Dr. Dietz is a member. With WALTER C. VOSS, '32, the present Head of the Department, who contributes to this issue (page 261) a review of *Modern Plywood* by Thomas D. Perry, '00, Dr. Dietz has worked on the gradual development of a reasonable solution to the housing problem.

**Patterns.** — From extended study of the unique materials in the collection of information on glass and glassmaking bequeathed to the Institute by Thomas Gaffield, STERLING LANIER records for The Review (page 268) the first part of a varied history. It is that of the manufacture of glass in Massachusetts in the late Eighteenth and early Nineteenth centuries — a story of many vicissitudes and much human interest. Mr. Lanier, an instructor in English at Technology, contributed to The Review in January, 1938, commentary on the relationship of science and music.

**Precept.** — From HENRY D. HIBBARD, '77, now more than a fifty-year member of the American Institute of Mining and Metallurgical Engineers and the American Society of Mechanical Engineers, discussion of knowledge and experience comes with the ring of particular authority. Mr. Hibbard's essay (page 270) on practice and precept and their comparative merits is another in the somewhat random series of discussions of teaching, teachers, and the taught which The Review presents now and again. Last previous contributions were those of Edward H. Cameron, '13, and Professor William H. Timbie in May, 1941.

**Progress.** — The evolution of design in furniture is discussed for The Review (page 272) by CHARLES MESSEY STOW, editor of the antiques, furniture, and decorations departments of the *New York Sun*. Mr. Stow finds much that is good in Modern furniture, and notes one most unusual aspect of its origin.



## HOW TO SEE RED... AND LIKE IT!

Friction . . . arch enemy of speed in the machining of iron and steel . . . meets its match in cutting tools made of Haynes Stellite non-ferrous alloys. For these alloys . . . of cobalt, chromium, and tungsten . . . have the amazing property of "red hardness." Unlike cutting tools made of ordinary metals, they *keep their edge* . . . and keep on cutting . . . even when friction heats them *red hot*.

Making possible tougher, longer-lasting cutting tools is only one of the vital roles played by Haynes Stellite materials. Because they stand up under heat, abrasion, and corrosion, they are used to hard-face many different kinds of metal parts.

Oil well drilling bits . . . steam shovel bucket lips . . . heavy gears . . . shafts . . . airplane and truck exhaust valve seats . . . crusher blades . . . mixers . . . plowshares . . . and other pieces of equipment that must withstand steady punishment have their lives lengthened . . . and their efficiency stepped up . . . with welded-on hard-facings of Haynes Stellite alloys.

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new parts, base metals can be selected for such valuable properties as strength and ductility — without particular regard for wear-resistance — because they can then be armored against abrasion, heat, and corrosion by hard-facing with Haynes Stellite alloys.

Further savings can be made by the use of these alloys because worn parts can be *renewed*, instead of being sent to the scrap pile . . . thus eliminating replacement with materials hard to obtain.

Faster production . . . conservation of metals . . . lower costs . . . these are the contributions made to industry by Haynes Stellite alloys.

The development of Haynes Stellite Company alloys and hard-facing practice has been furthered by the metallurgical knowledge of Electro Metallurgical Company, by the research facilities of Union Carbide and Carbon Research Laboratories, Inc., and by the service organization of The Linde Air Products Company — which companies also are Units of Union Carbide and Carbon Corporation.

**HAYNES STELLITE COMPANY**

*Unit of Union Carbide and Carbon Corporation*

KOKOMO, INDIANA



NEW YORK, N. Y.

# Nº 5's--for accurate grinding of small defense parts



No. 5 Plain Grinding Machines--  
serving in batteries in  
defense industries where  
high production and very  
close limits are imperative.



Brown & Sharpe Mfg. Co.  
Providence, R. I., U. S. A.

## BROWN & SHARPE

BATH  
IRON WORKS  
CORPORATION

Shipbuilders and  
Engineers

BATH, MAINE

## MAIL RETURNS

### Error

FROM CALVIN WHITE:

May I call your attention to the fact that the photograph on page 63 of your December issue is of the New York Hospital and not Rockefeller Center as stated in the caption.  
*New York, N. Y.*

### Assist

FROM CHARLES E. LOCKE, '96:

It has occurred to me that the facilities of The Review might serve a very useful purpose in solving a problem of the Alumni Office. For a number of years we have had on file a complete set of "Techniques." But through an unfortunate circumstance, which need not be detailed, the copy of the 1897 "Technique" has become irretrievably lost. This file of "Techniques" performs a very useful function in the Alumni Office, in that it serves constantly as a source of information on past events in the history of the M.I.T. The absence of the yearbook for 1897 is therefore keenly felt, for it results in a gap in our stock of necessary material.

The thought has occurred to me that among the Class of 1897 or possibly in the membership of other, adjoining classes, some Alumnus may have a copy of the 1897 "Technique" which he would be willing to donate to the Alumni Office. Or if he has not the volume himself, he may know of some source whereby the Alumni Office could secure a copy. Any communications offering assistance for the accomplishment of this useful objective will be gratefully received by the writer of this letter.

*M.I.T., Cambridge, Mass.*

### Comeback

FROM ARTHUR K. HUNT, '85:

I was particularly interested in the first article of the Trend of Affairs in the February issue of The Review. Sounds like a good comeback for New England. As to glass, you know of course of Sandwich glass, manufactured at Sandwich, Mass., years ago. Did you know that there was a glass factory in Portland, Maine, long ago . . . ? [It] was bought from my father by the . . . forerunner of the American Sugar Refining Company, and they sold it to the Maine Central Railroad.

*Brookline, Mass.*

Speed with  
Economy



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You may find the solution of your building needs in the rehabilitation or alteration of an existing structure. . . . We've wide experience in this type of work, as well as in new construction.

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INDUSTRIAL CONSTRUCTION

Alfred T. Glassett, '20, Vice President



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Automotive exhaust manifolds must have resistance to growth, and good strength at elevated temperatures. Competitive conditions demand minimum costs.

An iron containing about 3.30% C—2.20% Si—0.70% Mn—0.60% Cr—and 0.60% Mo does the trick, while holding down foundry and machining costs.

This Chromium-Molybdenum combination is char-

acterized by high strength and toughness at the working temperatures encountered in exhaust manifolds. Its growth resistance prevents warpage and cracking—saves gaskets.

Send for our booklet, "Molybdenum in the Foundry," giving data on Molybdenum irons. Sent free to interested students and graduates.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.  
MOYBDIC OXIDE—BRIQUETTES FOR THE CUPOLA • FERROMOLYBDENUM FOR THE LADLE

**Climax Molybdenum Company**  
500 Fifth Avenue • New York City



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P. M. Michfield



**I**N this nation's battle for the freedom of the seas, no ship performs a more unique and vital duty than the non-rigid airship — the familiar Goodyear "blimp." Its specialty is spotting submarines and mines.

The blimp's great advantage is that it can fly slow enough to see a raider lurking as deep as 90 feet below the sea; then hover motionless to drop its depth charges with bull's-eye certainty.

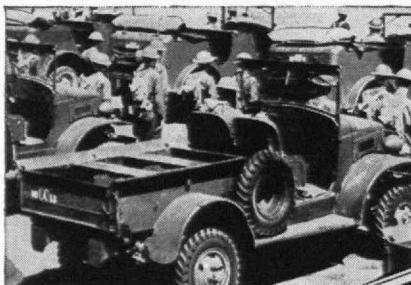
Today the Navy is operating new squadrons of Goodyear-built blimps over our sea lanes and in shore patrol. These new air scouts are the largest ever built. They can cruise for thousands of miles,

stay aloft for days without refueling — their gasoline consumption is so low.

Our ability to produce these ships quickly and in larger size than ever before is due to Goodyear's years of pioneering in all branches of aeronautics. Since the last war proved the

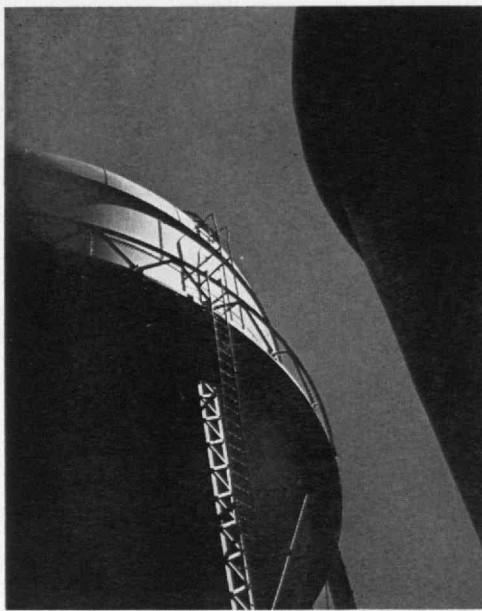
effectiveness of blimps in shore patrol, Goodyear built, maintained and operated its own fleet of airships — to be in readiness for just such an emergency as confronts the nation today.

Similarly in many new products we are now building to speed victory, ranging from bomber wings to combat tires for military vehicles, we are pioneering new advances in construction and design that will benefit the public when times return to normal. Goodyear is building for tomorrow — today!



Yes—Combat Tires! Even an anti-tank gun won't put these Goodyear combat tires out of action. They're used on military vehicles.





Daniel S. McDermott, '45

### *Tanks in sun and shade*

VOLUME 44

## NUMBER 6

# THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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*From a photograph for the General Electric Company*

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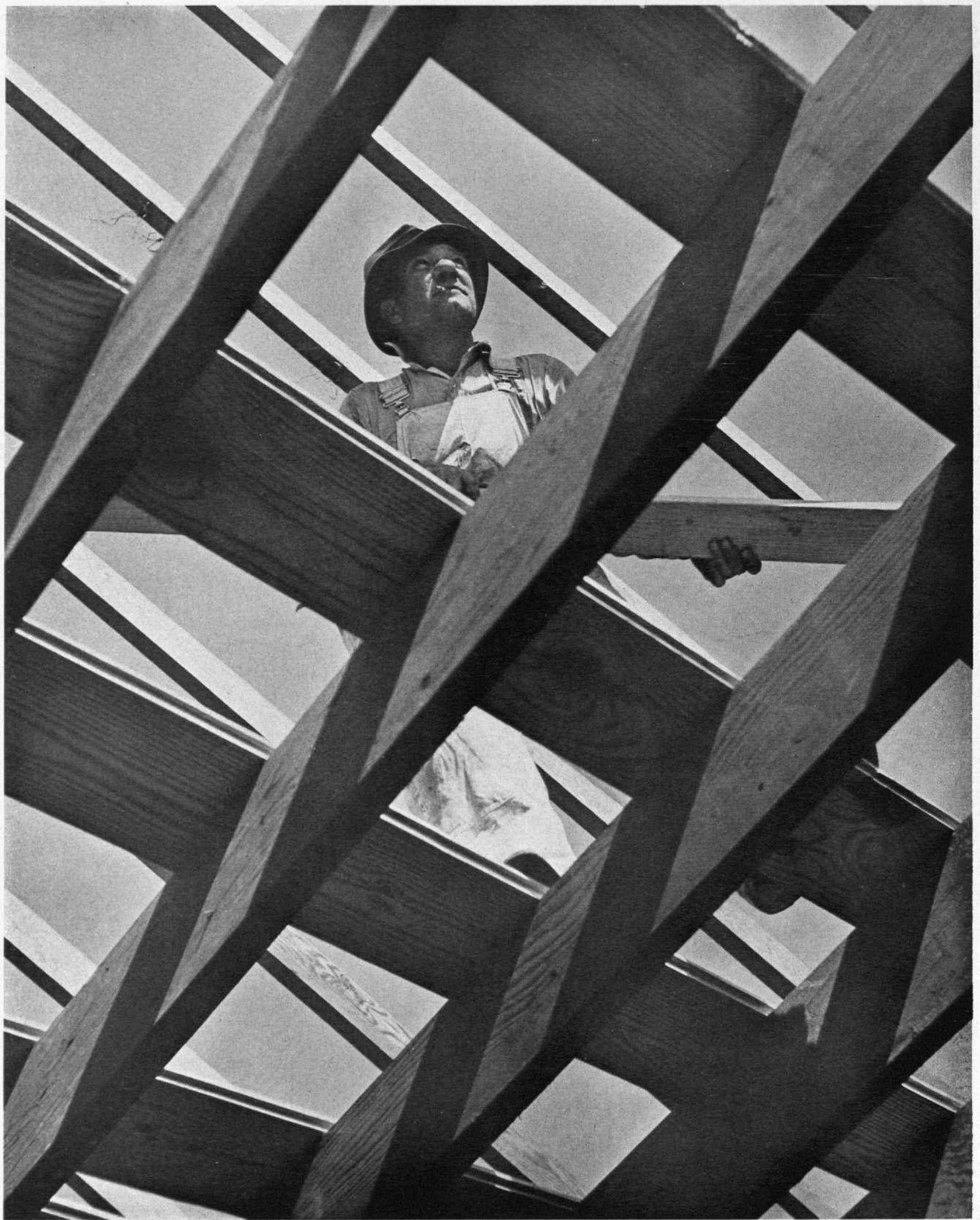
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*Walt Sanders from Black Star*

### CARPENTER

*Embodiment and environment of handcraft construction over which planners for the future seek to improve*

# THE TECHNOLOGY REVIEW

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Vol. 44, No. 6



April, 1942

## The Trend of Affairs

### *Retreat to the Subconscious*

JUDGING from modern trends in advertising art, the most objective and pragmatic of critics, industry's directors of sales and of advertising, have looked upon nonobjective, abstract art and found it good enough to borrow from. One can open the pages of fashion and class magazines, mass publications, and even conservative technical journals to find advertisements marked by the limitless distances of surrealism, the shades and planes of cubism, the fresh and mathematical balancing of Mondrian, and beneath them the great names of industry — Monsanto, Packard, Container Corporation, De Beers, and many others.

Advertising artists unabashedly declare their debts to the wild-haired boys of the brush — the men who, for the past 50 years or so, have kept the world of art in a steady turmoil with one fantastic mutation after another. Between the more notable of these schools and counterschools (for, as might be expected, among the harshest critics of these innovators have been their colleagues in novelty) one major similarity has been generally evident — rejection of the realistic. The trends have aptly been termed experimental art; as a result, the fact that many of their most significant and vigorous aspects as yet either are unacceptable or are ridiculed by the general public is more or less immaterial. Architects, printers, and the designers of many consumer products have not been so finicky.

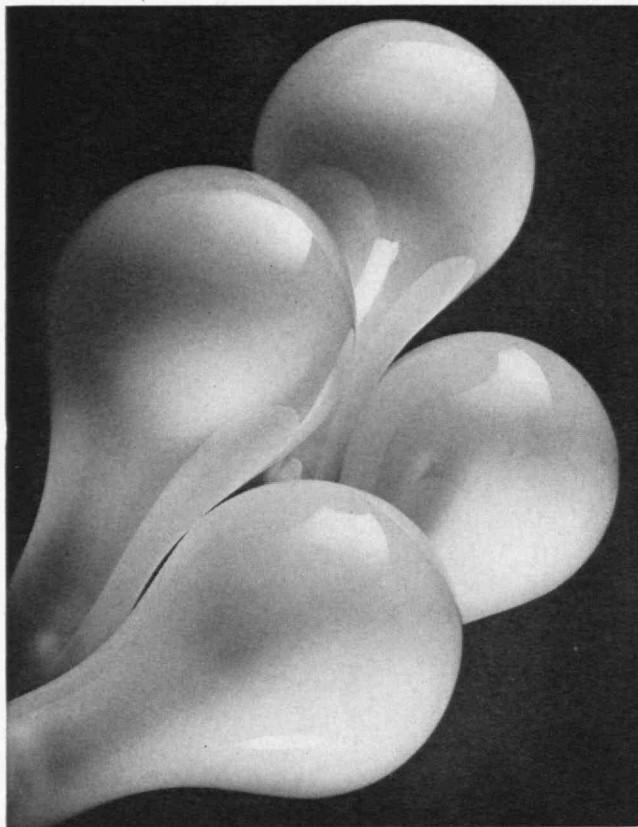
The reason commonly ascribed for the experimental artist's rejection of reality is that the camera is always the unquestioned victor in any attempt to picture the objective and that the more perceptive artists have therefore beaten a strategic retreat to stronger positions. One trend of particular interest to the publicist — propagandist as well as advertiser — is the retreat to the subconscious. In surrealism and neo-romanticism this

phase is seen most nakedly. Indeed the surrealists point out their position by their statements that they "paint from the subconscious," that their canvases are "hand-painted dream photographs." Noteworthy also is the fact that Freud, the Daniel Boone of the mind's depths, began to publish about the turn of the century and that his theories were beginning to be widely discussed a decade later. Those phases of Modern art which, paying least attention to continuity in space and time, give the freest rein to the world of dreams and fantasy are younger still, but their forms and symbols are frequently found described in Freud's *Interpretation of Dreams*.

The potency of these forms and symbols in advertising is not to be ignored. The artist's lack of respect for the laws of space and matter may lead the analytical mind to reject him, but most minds are not analytical. On the contrary, the use of symbols with powerful associations and of atmospheres deliberately ignoring reality creates an impression designed to by-pass the critical questions of the foremind. A dime rolls past the isolated tower of Independence Hall across an empty and indefinite plain to pass under a triumphal arch, and the idea is expressed that dimes for defense stamps will contribute to victory. A typewriter is set against a statue to leave the impression that the machine was created with the same skill and genius as the work of art, that it is a work of art. While simplification and association are old ideas, the modern artists are using them not only with daring but also with some scientific understanding of the psychological laws underlying them.

### *Robot Rationale*

MORE and more reliance upon automatic machines to perform all sorts of tasks has created demand for more comprehensive knowledge of control devices



Bob Smith

*In anticipation of Easter, a lily of light*

which see to it that the machines perform properly. The modern automatic control is often an uncanny affair which studies its own output, determines errors if any exist, and then unostentatiously makes the corrections needed to keep output at the desired standard. A simple example is the thermostat which maintains the temperature of a cookstove oven at a predetermined level. More complex examples are legion; one is the automatic pilot which will take over the responsibility for keeping an airplane on an even keel and on a prescribed course. Such devices as these — closed-cycle automatic control systems — are known as servomechanisms. They are characterized by the presence of a control element actuated by some function of the difference between the response desired of the system and its actual response. In other words, error in the behavior or state of the system is converted by the system into a correction designed to eliminate error. Thus the thermostat in your house is constantly on the job, telling the unperceiving furnace when to supply heat and when to desist, in correspondence with the vagaries of the weather outside.

A scientific approach to the design of these mechanical watchdogs of efficiency is a relatively recent development. Extensive need for the scientific study of servomechanisms naturally awaited the arrival of performance requirements which the older, empirical approach could not solve. In past years, servomechanisms have been designed on a more or less special-invention, cut-and-try basis, with a patch here and a tuck there to get a semblance of a fit. Modern requirements are so exacting, however, that comprehension and rigorous application of the theory underlying the perform-

ance of the mechanisms are essential to successful design. At Technology, a pioneering effort to establish rational analysis of automatic control got under way as early as 1934. In the last two or three years, intensive study of servomechanisms in theory and practice has been inaugurated and a laboratory for the conversion of analytical studies into actual machines has been established; this combination has already secured striking results.

Under the direction of Gordon S. Brown, '31, Associate Professor of Electrical Engineering, the program of study and laboratory work makes use of an approach developed at the M.I.T. by Harold L. Hazen, '24, Professor of Electrical Engineering and Head of the Department, and Dr. Brown. This approach has as its fundamental tenet that a quantitative knowledge of both the requirements of the situation and the dynamic characteristics of the elements available is essential to the synthesis of a solution. Thus Lord Kelvin's aphorism, that unless one can measure a thing one can't know it, applies again. In addition to the courses on automatic control given by Dr. Brown in the Department of Electrical Engineering, correlated subjects of study are being taught in the Department of Mechanical Engineering, since mechanical and hydraulic engineers regularly employ many devices suitable for use in servomechanisms.

In conjunction with these courses, the servomechanism laboratory is engaged in developing devices to do positional, rotational, and speed control by hydraulic or electrical means, and to meet high standards of speed, accuracy, and stability. Such devices find practical embodiment in governors, regulators, hydraulic-gear motors, and systems for the transmission of data. The voltage regulators and frequency regulators which help power companies to supply electrical energy of proper uniformity, the controls which insure accurate register in multicolor printing, the contour-searching devices which guide machine tools in the accurate reproduction of patterns — such machines also make use of the devices under study in the new laboratory.

### Frigid Freaks

**R**UBBER, in the news for scarcity as well as for manifold virtues, is of value principally because of the two properties of elasticity and insulating power. Chill it enough, and it becomes extremely brittle; its elasticity hence vanishes, and its insulating value is readily lost because it will crack under shocks. Transition from elasticity to brittleness occurs at a sharply defined temperature, according to the *Bell Laboratories Record* in an account of recent research. This brittle temperature varies for different natural and synthetic rubbers, and it apparently has some relationship to the size of the rubber molecule.

Large molecules generally have lower brittle temperatures than do small molecules, but the change appears to be sudden rather than gradual. Rubber having a molecular weight of about 6,000, for example, reaches the brittle point at -54 degrees Fahrenheit; with a molecular weight of about 30,000, the brittle point is -79 degrees, and it stays at the lower figure

even when molecular weight is 100,000. The brittle temperature characteristic of the material seems to be reached at some definite molecular size—for rubber that corresponding to a molecular weight somewhere between 6,000 and 30,000. For one of the synthetic rubbers the critical point is somewhere between molecular weights of 1,500 and 10,000. Brittle temperatures for large and small molecules may vary greatly. Another synthetic rubber, for instance, has been found to have a brittle temperature of 5 degrees Fahrenheit for small molecules and -91 degrees for large ones.

Crude rubber's brittle temperature is lower than that of any of the usual rubber compounds, the research indicated. Addition of asphalt, of resin, or of many oils raises the figure a few degrees. Carbon black and zinc oxide, however, produce but slight effect even when they are added in considerable quantities. Only two of the synthetic rubbers were found to be comparable to natural rubber in elasticity at low temperatures.

## *Modern Plywood*

BY WALTER C. VOSS

THE phenomenal growth in the use of plywood since 1905, and more particularly since 1925, has penetrated into the lives of nearly all of us. Some have been keenly aware of the importance of this advance in wood technology, while others have merely felt the effect. This adaptation of wood use, which is the result of combining older methods with modern mechanical procedures, has been developed gradually. Many have wished for a comprehensive treatise on present methods

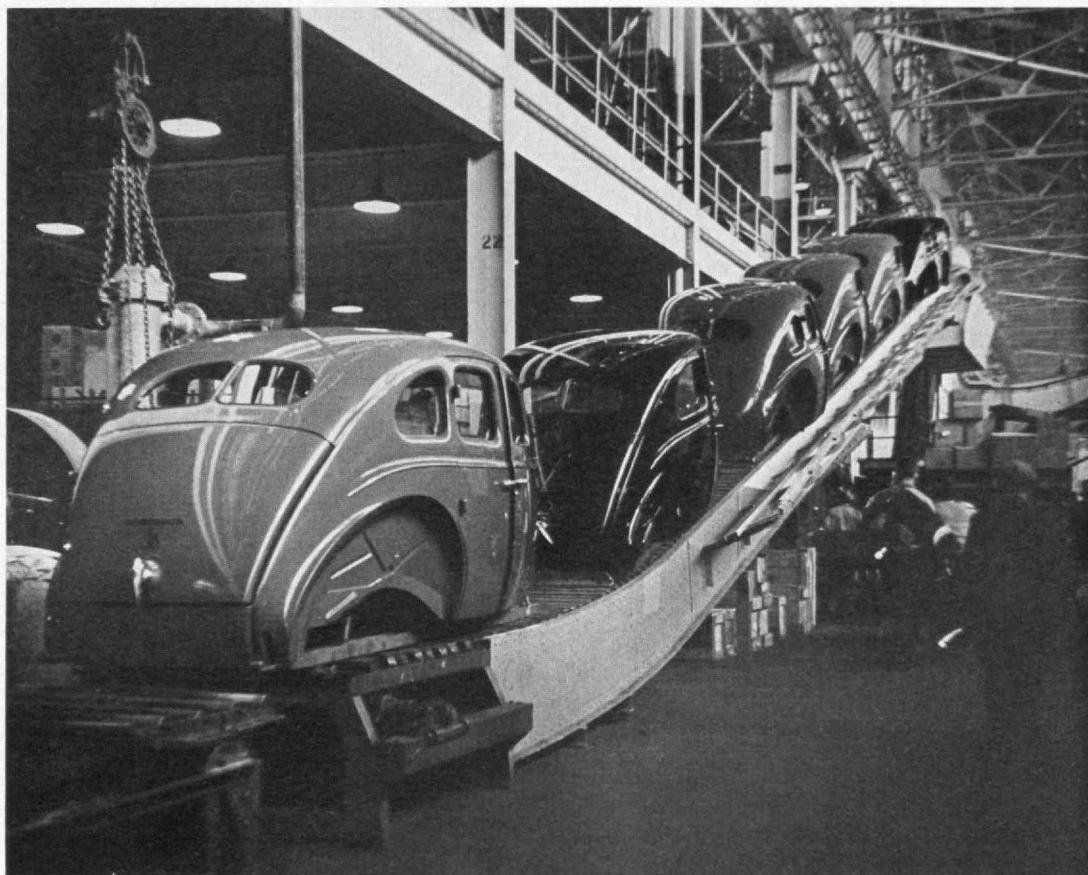
of manufacture and the effects which modern materials impart to the process. *Modern Plywood\** by Thomas D. Perry, '00, ably presents the connected story of this new material.

From the interesting and instructive historical section to that on the multitudinous applications of plywood in our modern life, the author has brought together an authoritative and currently useful fund of information which will be sought by those who are engaged in the manufacture of plywood, by those who utilize it in its many applications, and by the consumer who, in the last analysis, must find the products useful, ornamental, and durable. For the manufacturer, the sections on adhesives, plywood characteristics, veneers, plywood manufacture, high-density plywood, and the markets available for the product will be of inestimable value. Architects and engineers, aside from the interest which they may also have in these same sections, will be particularly concerned with the data on characteristics and on high-density plywood, as well as with the tabular data on plywood in section 9. The student of wood technology will be especially interested in learning the wide range of uses described in the section on plywood in industry. Testing engineers and research men should be conversant with the entire book—more particularly with the parts on testing and on adhesives and with the exhaustive bibliography which the author has assembled.

The significant fact about plywood is that, although wood is its basic material, some of the natural short-

\* New York: Pitman Publishing Corporation, 1942. Pp. xiv + 366. \$4.50.

*Curvaceous reminder of a type of production for the time being out of mind*



Richard W. St. Clair, '38

comings of lumber per se are removed by mechanically designed assembly. The characteristics of the resultant product, which have been aided considerably by research in adhesives, have brought about such a great demand for plywood that a treatise on the subject became necessary. Mr. Perry has furnished us a scholarly, scientific volume and withal a book having a very practical flavor. *Modern Plywood*, which, incidentally, is bound in covers of the material it describes, should be widely utilized and should point the way to greater development in the field of wood use.

### Olio

CLOTHING to equip a soldier completely and to maintain him for one year requires, according to most recent official estimates, 29.25 yards of woolen goods and 122.182 yards of cotton. On the average, cotton trousers have been found to wear less than half as long as those made of woolen; cotton underwear, about a fifth as long. ¶ Utilization of by-products has long been one of American industry's proudest boasts. Now comes utilization of a by-product of a by-product; a West Coast lumber concern is moving toward the commercialization of redwood-bark fiber as a textile material. Redwood bark, which may reach a thickness of 10 inches, was once entirely discarded as a waste. Then use of the long fibers in material for insulating cold-storage and packing plants put part of the bark to work. The short fibers, however, remained as a by-product, for they are separated from the long fibers in the manufacture of the insulation. Finding that the short fibers can be interfelted with natural wool has led to present efforts to establish use of them as a textile

material. Blankets, felt hats, and overcoat and suit fabrics have been made up, some of them containing as high as 60 per cent bark fiber. ¶ Automobile license plates issued for use during two or more years are under consideration by various states as a means of meeting an anticipated shortage of steel, according to the American Automobile Association. One plan for a permanent plate calls for the old number to be bolted over annually with a small strip of steel showing the new year-number. Under another scheme, paper stickers would be substituted for the plates. The concurrent shortage of plastics prevents consideration of use of a plastic in place of steel. Painting over the old plates, since it is estimated to cost about eight cents as against two or three cents for new plates, likewise is no possibility. ¶ In any event, license plates are probably going to be less colorful. Black, white, and domestic earth colors such as red oxides, ocher, umber, sienna, and a small amount of iron blue are expected to be the pigments available next year under a program designed to set up specifications containing a minimum of strategic raw materials. Yellow traffic markings on streets and highways, because they require chrome-yellow pigment, are also reported on their way out. ¶ Meter bars developed by equipment in operation at the Bureau of Standards differ from the approved international standard by less than two parts in 10,000,000. Lengths of standard light waves are used as primary standards in the production of precision measures to be employed in delicate machine work. ¶ Transparent flexible cellulose acetate replaces glass in a new photoflash bulb which thus incorporates one more of the manifold applications of the versatile plastics. The new bulb is said to give a more intense

(Concluded on page 294)



Characteristic Americana — the railway station in Atlanta, Ohio

F. S. A. Photo by Rothstein

# As Boundaries Break

## *How Biology Draws upon Physics and Chemistry for the Solution Of New Borderline Problems — with Comment on Progress In Biological Undertakings at Technology*

BY FRANCIS O. SCHMITT

CHARACTERISTIC of the present scientific era are the breaking down of boundaries which for generations have defined the several sciences, and the consequent rise of borderline fields. Under the influence of relativity and quantum theory, classical physics has metamorphosed into modern physics. The influence of quantum theory has been very great also in chemistry. Hence we now have not only physical chemistry but also chemical physics; from the literature, it is frequently difficult to tell whether an author is a physicist or a chemist. Similarly, the boundaries which demarcate biology from physics and from chemistry are becoming less prominent. We have only to read the modern journals of experimental biology and medicine to realize that the techniques of physics and chemistry are being applied very generally in biology. Indeed, the time lapse between the development of new physical and chemical techniques and their application in biological problems has become reduced to but a few years — in some instances, to a few months.

How are these rapid advances made possible? Only in exceptional cases are the new physical and chemical techniques applied to biological problems by the professional physicist or chemist. Rather, the biologist also competent in physics and chemistry, seeing the importance and implication of the new theory or technique, applies it to biological problems. The fact that the latent period in this process has been reduced almost to the vanishing point is due to the great increase in the number of biologists whose training in modern physics and chemistry is sufficient to permit such applications. Many contemporary biologists who have done outstanding work on these borderline problems received little formal training in the fundamental sciences but acquired what was needed when, in the course of their investigations, use of physical or chemical theories and techniques appeared necessary. Those responsible for the training of the new generation of biologists realize clearly, however, that students who have the inclination and ability to become investigators in quantitative biology must be given a training better calculated to meet their needs.

To get a clearer picture of the tempo and trends of modern experimental biology and medicine, let us consider a few of the more significant fields and the manner in which they developed. In 1859, the whole philosophy of, and approach to, biology were altered by the publication of *The Origin of Species* by Charles Darwin. For half a century thereafter, the major emphasis in biology was to prove organic evolution and to determine the relationship between plant and animal forms through

natural-history studies and experimental embryology. As early as the Seventies, Mendel stated certain laws which govern the processes of heredity and hence are of importance in the theory of evolution. Acute investigators like Weismann understood that heredity was determined by constituents of the cell nucleus. But not until 1904 did a young American show that this physical substratum is in fact the chromosomes. Then followed the invention of the gene as the hypothetical unit of hereditary determination, and particularly in America, the rapid expansion of the science of genetics. But if genes have real existence as highly localized entities, they should be susceptible of identification and characterization. At this point the problem passes into the hands of biophysicists and biochemists, who must apply modern theories concerning the structure of molecules of protein and of nucleic acids. Studies in ultraviolet absorption spectroscopy and polarized light have already assisted greatly in progress on this question, and doubtless the electron microscope will soon help.

Next let us consider one of the central problems of physiology, the nature of the nerve impulse. The first evidence of the physical nature of the impulse came from the work of Galvani in 1786. Three-quarters of a century passed by before an expert with galvanometers, Du Bois-Reymond, proved the impulse to be essentially electrical. Little fundamental advance was possible until the discovery of ions and the formulation of membrane properties had been achieved by the physical chemists in the latter years of the century. The invention of the string galvanometer some forty years ago made possible more accurate recording of the currents of nerve action which, because of their brief duration and high velocity of propagation, could not be followed by the slower instruments.

The real impetus to this work, however, was given by the modern technique of vacuum-tube amplification of small potentials and the recording of them on the cathode-ray oscillograph tube. From the first pioneering work by Gasser and Erlanger in 1923, the expansion of technique and applications furnishes one of the best examples of the importance of technology in modern biology. Each improvement in the design of tubes and circuits was immediately used for the work in electrophysiology. The discovery of "brain waves" soon followed, and the methods of electroencephalography are now used commonly in diagnosis. It is a commentary on the disappearance of traditional boundaries between biology and physics that many electrophysiologists have been recruited into the ranks of defense research physicists because of expertise in electronics.



M.I.T Photo

*The electron microscope at Technology. Cecil E. Hall, research associate in Biology, is shown placing a specimen holder in position.*

Finally, let us trace the progress in one of the most important fields in biology, the investigation of the structure of the cell and its constituents. In 1840 two German scientists formulated a theory which, in a sense, became the charter of biology. This, the cell theory, stated that the unit of the living organism is the cell; that all the potentialities of the plant and animal derive from the properties of the cell and from the organization of cells into tissues and organs. The microscope had been invented more than a century and a half before, and observations had been made on a number of tissues, but the fact that all of these tissues are made of protoplasmic units, or cells, was not realized until about 1840. What a contrast to the tempo of the modern age! The electron microscope, for example, was invented only about 10 years ago, but already two companies are manufacturing this complicated instrument commercially and great discoveries have already been made with it, including the photographing of virus and certain fibrous protein molecules.

With the improvement of the compound microscope in the Seventies and Eighties, biologists were busily engaged in describing the microscopic anatomy of cells and tissues. During this period, the recognition of the microbial origin of certain diseases and methods of immunization against these diseases made possible the birth of modern medicine. The discovery was then made that cells could be "fixed" by immersion in fluids such as alcohol and Formalin, and that thin sections of tissues suitable for microscopic examination could be cut with a microtome and the cell structures stained with a

variety of dyes. Hundreds of long descriptive papers were published on the structure of these preserved "corpses" of the normal cells and tissues.

In 1861 Thomas Graham published a survey of the state of matter, called by him the colloidal. Protoplasm was soon realized to be essentially a colloidal system, and the really important structures of protoplasm to be submicroscopic. Meanwhile, physical chemistry made its appearance in the late Eighties and Nineties under the leadership of Ostwald, Arrhenius, and Van't Hoff. It is interesting that the basis of early physical chemistry — the colligative properties of solutions — was derived experimentally from certain observations made by the botanist Pfeffer and the zoologist Hamburger on the osmotic pressure of cells and solutions of electrolytes and nonelectrolytes.

As a result of the developments in colloidal and physical chemistry, the physiologists led a revolution in biology, pointing out that the lengthy descriptions of cell structures based on preserved and sectioned tissues are largely descriptions of artifacts and that the real substratum of protoplasm is submicroscopic, colloidal, and molecular. At the same time pioneers like Jacques Loeb were attacking the difficult problem of the properties of protein systems. Heretofore, proteins had been regarded as having very special properties, which depended on their complexity and colloidal state. Loeb showed that proteins behave exactly as any electrolyte of high molecular weight might be expected to behave. This idea was heresy to many biologists, who refused for years to have anything to do with it.

With the help of polarized light and x-ray diffraction it has been possible, largely in the last decade, to show that the protein molecules in cellular fibers and membranes have definite orientations and structure. And these methods may be applied to the normal living cell, the production of artifacts being thus avoided. Most recently the electron microscope has been used to picture the molecular structure of cellular constituents.

Thus with the realization that the secrets of the organization of the living cell can be obtained only by a study of the molecules themselves rather than of objects visible in the ordinary microscope, came the application of a new set of delicate physical methods. Discoveries of greatest importance may well be expected to result from such studies.

A physicist or chemist does not feel that he understands a phenomenon unless he can express the data in exact quantitative terms, preferably in the form of a mathematical expression. Many biologists shy away from this approach, feeling that biological phenomena are too complex for such treatment. Yet, as the foregoing examples show, this attitude is unjustified; great progress can be made if biologists will but tackle the job without being too overawed by the complexities, yet not underrating the difficulties that attend the analysis of such a superb organization as living protoplasm.

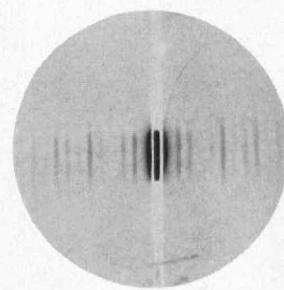
In this relatively young field of quantitative biology, the opportunities for pioneering work of course are numerous. With the aid of splendidly equipped laboratories, biologists at Technology are undertaking a broad program of teaching and research which offers much

promise of making use of these opportunities. Grants from the Rockefeller Foundation have implemented the work. Merely listing special techniques for which equipment is available gives a good cross section of the ways in which biology draws on other sciences: spectroscopy (deep ultraviolet to infrared), x-ray diffraction, ultraviolet and polarized-light microscopy, electron microscopy, surface-film techniques, cathode-ray oscilloscopes for the study of nerve action, short electric-wave technique, and ultrasonics, as well as numerous special procedures of use in biochemistry, enzymology, and bacteriology.

The importance of the multiple approach to difficult problems in physical biology is clearly implied in such a list as that above. Full as great, if not greater, is the necessity for collaboration between men trained in diverse fields — which is especially practicable in such schools as Technology. A specific illustration is to be had from work which the Institute's biologists have undertaken on the analysis of the molecular architecture of the proteins and of cellular constituents. As has been mentioned, the really important structures in the cell are not those which can be seen with the microscope but the molecules of which these structures are composed. To determine the structure and properties of the molecules, even the giant protein molecules like the viruses, we must use such optical methods as those of polarized light and x-ray diffraction, and the recently developed electron microscope. Complete information cannot be obtained with any one of these methods, but by piecing together the information from all of them we come as close to visualizing the molecules as is possible at the present time.

Recently, Institute biologists undertook to investigate the structure and properties of collagen, both because of its scientific interest and because the problem has certain value in connection with the war effort. Collagen is the protein which composes the dermis of the skin, tendons, and connective tissue generally. The x-ray method revealed that the collagen fibers were made of units 640 angstroms in length ( $2\frac{1}{2}$  millionths of an inch) and arranged lengthwise along the axis of the fiber. Examination with the electron microscope revealed very delicate fibrils which were cross-striated, the distance between the bands corresponding under certain conditions to the 640-angstrom spacing found by x-rays. This is perhaps the first demonstration of what

*Evidence of the molecular structure of collagen, secured by use of x-ray diffraction and electron micrography. The circular picture is that of the x-ray diffraction pattern of collagen fibers obtained from beef tendon. The diffractions are orders of a fundamental spacing of 640 angstrom units, showing that along the fiber axis there is a pattern which is repeated regularly every 640 angstroms. This prediction is confirmed by the adjoining electron micrograph, which shows a collagen fiber taken from the same material and magnified 48,400 times. The periodic structure along the fiber axis is to be noted. The distance between the bands corresponds to that predicted by the x-ray results. Both these pictures are unretouched. Similar photographs have been obtained for human skin. Knowledge of the molecular structure of such fibrous protein permits explanation of its properties on a logical basis and makes it possible to predict conditions under which the fiber may be expected to manifest a given set of physical properties. This approach may be expected to have a profound effect on fiber technology in general.*



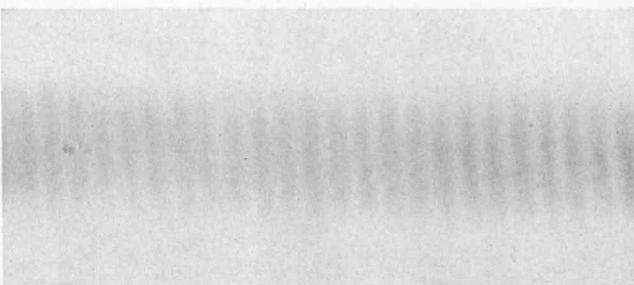
must appear to be equivalent to molecular domains in the components of animal tissue. The result would not have been attained by either the x-ray or the electron microscope alone but only by a combination of these methods. By a similar combination of techniques involving, in addition, static and fluxional birefringence, electro-optical methods, and enzyme studies, the general problem of fiber structure is being investigated.

In addition to its program in fundamental biology, the Institute is training students for careers in industrial biology and is undertaking investigations of problems important to industries dealing with biological products. This work is included under biological engineering. Teaching, research, and industrial co-operation in food technology have been in active operation for a number of years, and the scope of this phase of biological work at Technology is continuing to broaden each year, as is that of nutritional biochemistry. One practical result which has come from the latter research is the design of emergency rations for armed forces and for populations living under stringent economic conditions both here and abroad. The work is being co-ordinated with the program of the Board of Economic Warfare and is likely to prove of immense importance, particularly to South American countries, not only during the war but also in the subsequent period of reconstruction.

The biological industries are rapidly approaching the point where, as in the electrical and chemical industries, fundamental investigations are sponsored within the laboratories of the companies or by co-operation with special research groups. A number of food manufacturers, for instance, recently organized a foundation, of which President Compton is chairman, to investigate problems of importance in connection with the nutrition of the nation. Such industry-sponsored research should offer attractive careers to properly trained men. It should moreover lead to that very healthy mixture of the theoretical and academic with the practical and applied which has characterized the fields of electrical engineering and chemical engineering.

The expectation is that new biological fields within the general scope of Institute activities will in the future become better represented at Technology. For example, nutritional biochemistry, which is closely related both to fundamental physiology and biochemistry and to food technology, may be expected to broaden

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*Evidence of the molecular structure of collagen, secured by use of x-ray diffraction and electron micrography. The circular picture is that of the x-ray diffraction pattern of collagen fibers obtained from beef tendon. The diffractions are orders of a fundamental spacing of 640 angstrom units, showing that along the fiber axis there is a pattern which is repeated regularly every 640 angstroms. This prediction is confirmed by the adjoining electron micrograph, which shows a collagen fiber taken from the same material and magnified 48,400 times. The periodic structure along the fiber axis is to be noted. The distance between the bands corresponds to that predicted by the x-ray results. Both these pictures are unretouched. Similar photographs have been obtained for human skin. Knowledge of the molecular structure of such fibrous protein permits explanation of its properties on a logical basis and makes it possible to predict conditions under which the fiber may be expected to manifest a given set of physical properties. This approach may be expected to have a profound effect on fiber technology in general.*

# Sense and Shelter

## *Four Problems Must Be Met in Any Effort to Prepare the Building Industry to Handle Responsibilities Which the Future Will Impose*

BY ALBERT G. DIETZ

MANY a potential home builder, now prevented from realizing his ambition because home-building materials are needed for defense, looks forward to going ahead when the emergency is over. Many long-range planners, casting about for some means of cushioning the shock of transition from wartime to peacetime economy, look upon low- and medium-cost housing as the most promising field for large-scale activity. Not only is present demand dammed up; residential construction, with all its ups and downs, has been generally subnormal for some twelve to fifteen years and at its low point did not even keep up with the rate of demolition, not to mention depreciation and obsolescence. A backlog of needed construction exists, which can be translated into large-scale employment for a long time to come provided the building industry is able to pull itself together and to overcome the present structural weaknesses which have so far prevented it from producing a good medium-cost house, let alone one at truly low cost.

Large-scale house construction cannot come about until home-building costs are drastically reduced. To date, only families in the upper-third income group have in general been able to afford new homes, but this group, already comfortably housed, does not represent the sustained large volume of home building which is needed. The real backlog exists among the great number

of families of the middle-income group, now living in secondhand, seldom satisfactory accommodations. For them, houses as now built are too high priced and are likely to become even more expensive under a heavy postwar taxation program which is bound to reduce real wages as it drives all costs still higher.

If the hopes of a great many would-be homeowners are to be realized and if the building industry is to provide the necessary postwar shock absorber, steps must be taken to root out the present sources of high costs, many and deep seated though they are, and to reorganize the structure of the industry in order to provide a better home at lower cost.

Everything considered, the chief contributing causes of high costs can be grouped into four categories — lack of organization, outmoded construction practices, legal restraints, and excessive financing costs. With these must be included the lack of adequately trained men possessing a full knowledge of the ramifications of the industry and of how they must be tied together to make it operate to the best advantage both of itself and of the homeowner.

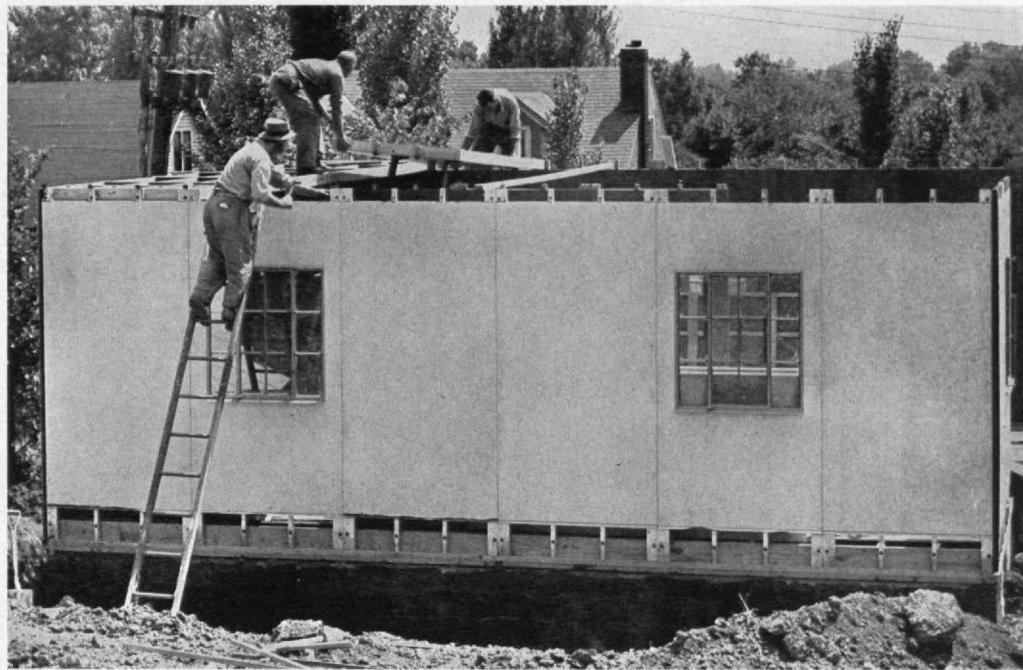
The most serious charge against the home-building industry is its lack of organization. It must be realized, of course, that home building, unlike steel manufacture or automobile production, is in the last analysis a local industry, and its product must ultimately be assembled



*A panelized house incorporating various techniques of prefabrication. Greater volume is seen as producing important economies in first cost.*

Gunnison Housing Corporation

*Wall panels in place, ceiling panels go into position as the erection crew assembles a panelized dwelling.*



Gunnison Housing Corporation

at a site which itself has had to be prepared in advance. Housing production cannot, therefore, be completely centralized but is finally dependent upon local organization. Anyone who has been through the experience of building a home can testify, however, that any such thing as a home-building organization giving complete service, does not exist. The potential home buyer, if he does not want to risk purchasing an underbuilt, over-decorated, stereotyped, speculative house, literally has to buy his house piecemeal, and to a large extent himself assemble the organization to put it together.

No single central agency to which he can go for complete service is available. His architect, if he has one, he selects by hearsay. His builder, similarly, he chooses more or less blindly or by the wasteful process of competitive bidding among a number of builders of whom he knows little or nothing and who are not familiar with his needs and desires except as imperfectly shown on a blueprint. His hardware he picks out in one place, electrical fixtures in another, wallpaper in another, plumbing requirements in another, and heating appliances in another, until he thinks there is no end to detail; and all his decisions, affecting the most important step he is likely to take, must be made without benefit of competent, unbiased guidance. This heterogeneous collection of trades and suppliers must be assembled and organized for his one particular job, only to be disbanded when that job is done and to be reassembled and reorganized differently for the next homeowner. All this takes place after he has combed the neighborhoods for a desirable lot within reach of his purse, in itself a time-consuming, often disheartening process. Small wonder that he is likely to give up in despair and buy a ready-built or secondhand house instead.

Costs, under such a lack of system, are bound to be high. Architects cannot afford to render competent professional service at a reasonable fee for medium-cost houses when much of their time is taken up with details of organization and supervision. Builders' overhead is

large because of the cost of making bids (being low on one bid out of ten is excellent marksmanship) and because of the time and effort involved in looking after the twenty to thirty different subcontractors, suppliers, and trades involved in a single job. Subcontractors face the same problems only in lesser degree. Suppliers of materials and equipment all maintain separate establishments, display rooms, sales forces, and service crews. Duplication and overlapping are to be found everywhere, but integration into a single, co-ordinated team is lacking. Final costs cannot help being high.

One of the most pernicious aspects of this lack of organization is its effect upon labor. Because no employer operates on a scale large enough to guarantee his men year-round employment, labor finds itself in a highly uncertain state respecting income. Knowing by experience that no work is likely for a considerable portion of the year, labor naturally demands a high hourly rate in an effort to guarantee itself a reasonable annual return. The effect upon the cost of the individual house is obvious, and every increase in labor rates occasioned by labor's effort to maintain a minimum standard merely tends more to restrict the amount of building which can be done. Further reflecting the unintegrated condition of the industry, building labor is split into a multiplicity of crafts, each extremely jealous as to who shall perform certain classes of work and imposing absurdly refined rulings which restrict the scope of each craft's activities.

Not until the industry is organized into units capable of offering labor a more or less assured annual income in place of an uncertain hourly wage can the high cost of labor for each house be much reduced. On the other hand, labor could do much to eliminate confusion, delay, and wasted effort by simplifying its antiquated internal structure, by reducing the number of trades and crafts, and by ending restrictions on the work a man may do. A single house building craft might well result.

(Continued on page 280)

# A Cloth of Glass

*Surveying the Ups and Downs of Massachusetts Ventures into  
The Manufacture of Glass Gives Basis for Commen-  
tary upon the Cutting of Industrial Patterns*

BY STERLING LANIER

NEW ENGLANDERS have always been adept at cutting their industrial pattern to fit whatever cloth opportunity placed in their hands or initiative and imagination suggested. Glass manufacture was such a cloth, but the cutting of the pattern proved costly. It started with the founding of the Boston Crown Glass Company at the end of the Eighteenth Century and ended about 1875, when a few remaining companies, which had succeeded despite periodic reverses, finally shut down their furnaces and closed their books within a few years of each other. Most ventures in glass manufacture failed, yet because of the excellent work done by those few which were successful, and as a commentary on the course of industrial development, the century of glass manufacture in Massachusetts is worth recording. The present article, in no sense a complete historical account, is intended merely to be a general survey of the ups and downs of the business.

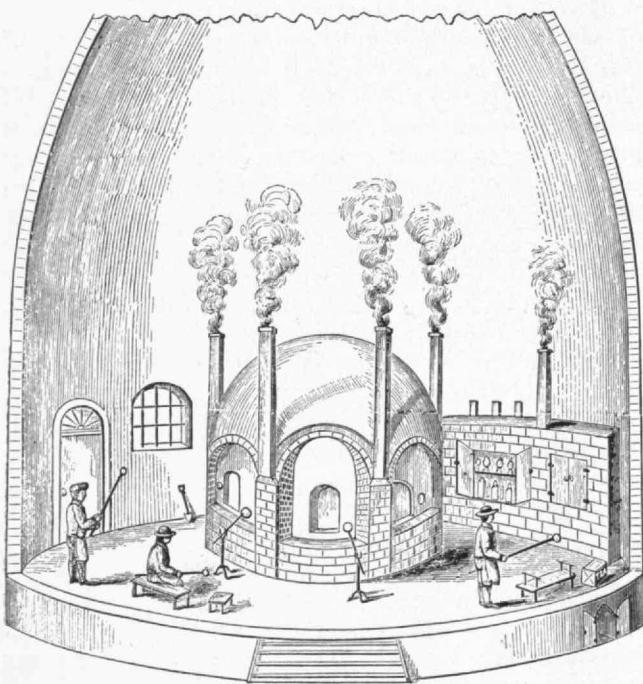
Long before the end of the Eighteenth Century, of course, many preliminary efforts to produce glass had been made in the country as a whole — the earliest at

Jamestown, Va., from which settlement, as early as 1608, glass was being sent to England. Glass manufacturing was first undertaken in Massachusetts about a generation later, a factory being opened in 1639 at Salem. The attempt proved abortive. Another equally unsuccessful attempt was made by a party of Germans at Quincy "some years before the American Revolution." Their story is briefly related by Deming Jarves in his *Reminiscences of Glass-making* (Boston, 1854). How long their factory existed is not clear, and their product Jarves calls "black metal only . . . of the rudest style." "The site of their manufactory," he continues, "is now occupied, we believe, by the institution called 'The Sailors' Snug Harbor.'"

These early attempts were probably (at Jamestown certainly) concerned with making bottle glass. In general, glassmaking can be divided into three kinds: *building glass*, consisting of both window and plate glass and all varieties of cast and rolled sheet-glass; *glassware*, usually referred to as flint glass, consisting of pressed or blown tableware, jellies, tumblers, goblets, lamps, stemware, opalware, cut glass, and the like; and *bottle glass*, consisting of all bottles or jars in flint, green, or amber glass. Although Massachusetts cannot be credited with the first glass factory in America, it can boast the first flint-glass company — started by Thomas Cains. Also, the Boston and Sandwich Glass Company was responsible for the invention of pressed glass, as a result of which the United States has always been pre-eminent in the manufacture of pressed glassware.

Let us turn now to the record of the century of glass-making in Massachusetts — a rather confused record. For most of the material I am indebted to Thomas Gaffield, who from 1858 to 1894 kept a "Glass Journal." Herein he recorded his observations on all matters pertaining to glass and glassmaking, which resulted from innumerable visits to glass factories both here and abroad. Furthermore, in another series of volumes, entitled "Notes on Glass," he assembled magazine and newspaper articles, pamphlets, and brochures relating to glass. This extensive collection as well as numerous books on the subject were given to M.I.T., of whose Corporation he was a member for several years.

Gaffield's interest in glass was a natural outgrowth of his desire, as an importer and dealer in glass at Boston, to share in the profits of manufacture, which to many appeared great. With his partner, Mr. Tuttle, he founded the Boston Crystal Glass Works and proceeded to lose, over a short period of years and despite the most untiring efforts to make himself an expert on the subject of glassmaking, a considerable



*During its greatest period — in the Sixteenth Century — famed Venetian glass was made in a furnace such as that reproduced above from a drawing in Deming Jarves' Reminiscences of Glass-making. The fact that workers of those days were absolutely unprotected from the heat and smoke of the furnace did not seem to detract from the beauty of their workmanship.*



*In contrast to the unhealthfulness of the Venetian glass factory shown opposite is this "American model glass factory" of the mid-Nineteenth Century, also reproduced from Jarves.*

amount of money. Much gold had changed into rusty glass in the half century preceding 1861, when the Boston Crystal Glass Works was begun.

The century of glassmaking in Massachusetts can be dated from 1783. It was a somewhat hesitant and unstable beginning. In that year, Robert Hewes of Boston was granted permission by the state to run a lottery in order to raise £3,000 "for the purpose of building a glasshouse and promoting the manufacture of crown and bottle glass in Boston."\* The progress of the lottery is not recorded, but the first of a series of innumerable failures may have pointed a prophetic finger of warning which went unheeded by many in the years that followed.

Obviously this experiment failed, for only four years later an act of July 6, 1787, repealed this lottery act. Hewes relinquished all rights at first granted. The 1787 act named William Phillips, Edward Payson, Fred Walley, Samuel Breck, John Gore, Fred Dawes, Jr., Jonathan Amory, John Amory, John Andrews, and Henry Higginson — all of Boston — as having formed a copartnership with Hewes and having raised funds for the purpose of manufacturing glass of all kinds in the commonwealth. Evidently the commonwealth was quite anxious to have this venture succeed, for it was accorded many rights and privileges: For 15 years it had a monopoly on the business, the penalty for incursion being somewhat severe — £500; for five years, moreover, it was exempt from taxation; and, lastly, its men were exempt from military duty as long as they were employed in glassmaking. (Though the fine of £500 seems severe, in comparison to earlier fines it is rather mild. For instance, the penalty for counterfeiting Hewes's lottery tickets was a fine not exceeding £150, im-

prisonment of not more than twelve months nor less than two, and public whipping not exceeding 39 lashes — any or all of these penalties to be imposed at the discretion of the court and according to the circumstances of offense.) The company which this group of men started was known as the Boston Crown Glass manufactory. Just when Robert Hewes left the group is uncertain, as are the causes of his leaving. His career again foreshadowed that of many a future glass manufacturer, however, inasmuch as he was last heard from in Temple, N. H., where he tried the lottery idea again, and failed again.

The monopoly granted to the Boston Crown company was effective, for the next date mentioned by either Gaffield or the Digest of Acts of Incorporation of Glass Companies in the Commonwealth of Massachusetts is 1812. Yet in the following two decades — up to approximately 1830 — records show at least 14 other glass companies springing up. Possibly many more existed of which no records are available. This period, 1812 to 1830, could be called the first era of glass expansion in Massachusetts, since during the fourth and fifth decades of the century a lull set in, the reasons for which will become obvious. The second era, from about 1850 to 1870, was the one which included Gaffield's own unsuccessful venture with the Boston Crystal Glass Works, to be discussed in a second article.

Of the total number which commenced operations during the first era, only two can be called successful — the New England Glass Company, established in 1817, and the Boston and Sandwich Glass Company, founded in 1826; during periods of 60 and 52 years, respectively, both produced much glassware of several kinds, which has justly become famous. A great deal has been written

(Continued on page 284)

\* All quoted material, unless otherwise indicated, is from Gaffield's "Glass Journal."

# Firsthand Knowledge

## *Precept Must Lag behind Practice Because Writers and Language Are Both Severely Restricted*

BY HENRY D. HIBBARD

SPEAKING of a book by a noted steelmaker on the manufacture of steel, a famous professor of metallurgy once said, "He tells everything except how to make steel." The professor looked for something which could not be there, and though his criticism claimed indeed far too much in crediting the book with "everything," it raises the question whether how to make steel can be told in one book, or in many, for that matter. Hundreds of books and articles are printed each year about steel — its production, properties, and uses — and hundreds more will come each year, but all of them together will leave the volume of untold things practically undiminished.

In short, no art of the complexity of steelmaking has been or could be described in words such that an intelligent person relying exclusively on them, even when they are supplemented by illustrations, could make steel of a merchantable quality. Even the professor with all his knowledge of metallurgy could not, at least until he had learned how in the shops — had acquired firsthand knowledge.

Firsthand knowledge is that gained from experience. It is that which enables its possessor to do something successfully, such as practicing an art or a trade. Yet we must not assume that anyone, even with the knowledge of an art gained by practicing it, knows all that is, or is to be, known of it. Firsthand knowledge grows continually, and in many ways.

Ideally, books would transmit firsthand knowledge. If they did, the professor's statement would not be made. That they don't is the result of two troubles — in part the failings of writers, in part the failings of language itself.

Few practitioners of an art write what they know about it. If they do, and at least attempt to be frank, they usually resort to such general terms that they tell but little to one trying to learn the art or to improve his practice of it. Some practitioners have recourse to generalities because their business connections forbid their writing candidly about shop activities. Others write only about the large and general aspects of their subjects because they cannot cope verbally with simultaneity in action. That is, they drop out of account the many little points about the practice and attendant phenomena essential to successful operation, and drop them out because to describe all of them, with their simultaneous relations to each other, is beyond the writer's control of language, even if we assume that the writer is thoroughly familiar with the phenomena. Sometimes the writer may deliberately omit such material because of a fear that if he includes it, his writing will run to excessive length. More often, the reason is

implicit in the familiar statement, "I can't tell you how it is done, but I can show you," which epitomizes the difficulties of transferring firsthand knowledge.

An equally, if not more, important gap in much written material is the absence of notice of mistakes, failures, and bad practice generally. Writers do not include discussion of the ways of going wrong, and of how to recognize, avoid, and remedy them. Reasons for the omission are not hard to find: One is the fear of length; to describe each false or wrong step would require space and attention comparable with that demanded by normal good practice. Another is the trouble of simultaneity; flaws and errors happen all in a group, whereas words necessarily follow one after the other. A third is the fact that ability to see an error at the start, and stop it before harm has been done, is one of the "tricks of the trade." It is firsthand knowledge, which the possessor has gained through having made the common mistakes or at least having been present when they were made. Because it is firsthand knowledge, it has become second nature and is not thought about, yet knowledge of how to deal with these off-the-track happenings is essential for successful practice and really ought to be available in the books.

To distinguish sharply between the failings of language itself and the failings of people who use it of course is virtually impossible. Nevertheless, some of the faults of omission and commission in technical literature can be more directly attributed to words than to writers. Or perhaps we might better say that some faults would be corrected more quickly by improvement in the powers of language than by improvement in the ability of writers to use language. The limitations of language are indeed real, and this fact is a large part of the reason why the unwritten knowledge of many an art far exceeds in volume the written.

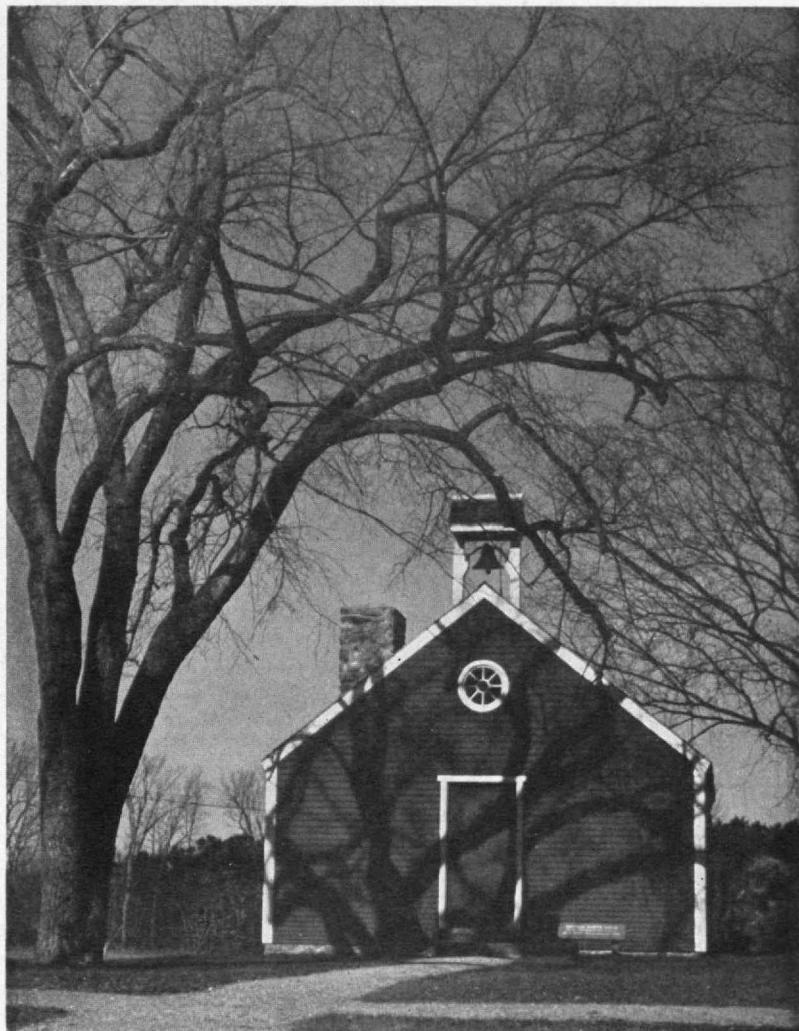
Most callings have words of their own and give special meanings to other words, so that a glossary is often necessary if the reader is to understand even the face value of literature on the art. At one steel works, for example, a specially shaped firebrick was named by a mason "gingerbread," and a smaller brick at the same plant acquired the name "sprat." These names stuck. Another weakness of language is the fact that a single term may have many meanings. The custom has been — with exceptions, of course — that when a new thing or substance is discovered, or a new action is developed, someone without much thought applies to it a word already in common use. The word "set," for instance, requires almost 23 pages of one great volume of Murray's dictionary to give its more than 150 meanings.

Such a situation tends to lessen the clarity of language. These limitations on words mean that the reader must co-operate if the book under study is to be given a fair chance. To get the full meaning of language so limited, one must know something of the matter treated, for no writer would begin at the beginning. He would assume his readers to have some knowledge — at least of the fundamentals. Thus Edison told the author of the book on steel which I have mentioned that it was unintelligible to him. He did not know enough of steelmaking to understand it, though it was clear to one at all versed in the literature of the art or skilled in its practice.

Not all language, of course, is of equal ability or inability to impart knowledge. The variation depends in large measure on the skill of writers, some of whom know their subjects far better than do others and some of whom, knowledge being equal, far excel others in the force and clearness with which they use words. Nevertheless, language, taken alone, has a fundamental weakness to impart knowledge, a fact which would quickly be realized were one to try to teach geometry without employing figures, or chemistry without a laboratory. Some kinds of knowledge cannot be given by telephone, which uses language, taken alone. Words spoken face to face are in a different class from those which are conveyed by telephone, for they can be helped out by changes in facial expression, by gesticulation, and so on.

Whewell, in his *History of the Inductive Sciences* . . . , notes that only in modern times have trades and arts commonly been described in language, but he also admits that more about them is transmitted by operation and example. This admission and the ancient Chinese proverb, "One picture is better than many words," correctly evaluate language. They explain also why one who telephones much finds that if the matter discussed is something that can be drawn, it is helpful for the talker to sketch as he talks and for the listener to make the sketch also as he listens. Pictures seem to be a closer approximation to firsthand knowledge, probably because, unlike words, they are neither ultraspecialized nor overgeneralized.

One may complain — "All this is but a restatement of the old adage, 'Experience is the best teacher.'" True, but the adage, in its brevity, fails to show the great gap between learning by word and firsthand knowledge. To understand that that gap exists is more important daily. The claim has been made that of all new businesses, the great majority fail — by one estimate, 95 per cent. The reason for many of the failures — perhaps for most of them — is, I think, lack of firsthand knowledge by the responsible head of each new enterprise, for failure to realize that book knowledge is no substitute for the practical has wrecked many a career. Lack of experience is a common, valid excuse for the



*Richard W. St. Clair, '36*  
Educational tradition is summed up in the original building of Governor Dummer Academy at Deerfield, Mass.

failure of a product or process to meet requirements. In business, the need for actual experience in any department except the simplest is tacitly but universally recognized. In new undertakings, of course, experienced men are not always to be had, and if the work is to be commenced it must be by inexperienced hands. Hence new enterprises, even if well conceived, well installed, and intelligently managed, usually take much time and effort, and perhaps money, before reaching a stage of commercial success. Every instance of this sort which one might cite is but a further argument for the desirability of improvement in our means of transmitting firsthand knowledge through the medium of words.

To teachers, these matters should be of importance. The failure of words to give a student capacity to take a job in his profession is often stressed, but it should not be. What he knows helps the graduate to understand what he meets in his employment and aids him in accumulating the essential store of firsthand knowledge. The danger which he runs is that of foolishly regarding the knowledge he has gleaned from books as sufficient in itself. Those who live in a world of ideas and words have,

(Concluded on page 291)

# Furniture in Transition

*For the First Time in the History of Design a New Style Starts  
In the Lower Price Brackets; Compactness and Simplicity  
Conspicuous Virtues of What Is Called "Modern"*

BY CHARLES MESSEY STOW

MATERIALS and processes used in the construction of furniture depend largely upon that aesthetic combination of lines and ornaments called "style," a word assumed to have a broader meaning than "fashion," which is fleeting and ephemeral. The style of American furniture, which has nothing to do with the fashion of the hour, is at present undergoing a process of evolution out of traditional lines, ornaments, and forms into something which will be vigorously expressive of America. This style will be native in inspiration, native in service, and native in construction — in short, American. Of course, new designs and new materials will evolve.

At the moment, the turmoil into which war conditions and government priority orders have thrown many industries is not yet particularly evident among furniture manufacturers. Their plastic glue is cut off and their metal for hardware trimmings is curtailed, but these are the only materials thus far affected.

Though floundering is past and a new theory of form has been introduced and accepted, the future style is still subject to experiment and is still lacking in one of the chief elements of any style — beauty. A breathing spell, therefore, would give designers a chance to digest the progress that has been made and to work out

the kind of ornamentation needed to add the element of beauty to the compactness and efficiency already achieved.

The casual scanner of advertising who has had no occasion to buy furniture in recent years may remember that in the magazines and newspapers a few years ago he saw strange shapes — beds and tables like packing boxes, and chairs like huge gobs of shapeless material — and he may recall how glad he was that his old things would do a while longer, for he certainly could not see those monstrosities in his home. Yet those queer-looking beds, tables, and chairs were the first signs of a revolution that has been going on ever since in the manufacture, styling, and merchandising of furniture.

The revolution began at the 1925 Paris exposition with the showing of some chairs made out of steel tubes, and other articles of furniture entirely innocent of ornament but with uncompromising right angles and even acute angles. Soon a group of this furniture was brought to a New York department store, and the smug Gothamites who went to see it chortled about crazy foreign designers and went home to their Rococo curves and pseudo-Baroque ornaments. Presently, however, some of these people became aware that their furniture seemed to be a little out of keeping with their manner of living — a little too fussy for convenience, a little too old-fashioned for the times. Some of the designers in this country felt that same awareness, and soon pieces of furniture in the new style appeared here and there, called, for lack of a better name, "Modern." That name has clung through its later development and refinement into forms which are more plausible. Since Modern is a relative term, descriptive of no fixed element, the style that is developing will doubtless have a name someday so that we can refer to it as we refer to the Chippendale, the Hepplewhite, or the Louis XVI periods. One abortive christening was "streamline," but the incongruity of attaching that term to static objects was obvious. Meanwhile, we can continue to call present-day furniture Modern, and everyone will know that we mean a style quite different from anything traditional.

The reason for the need for a new style of furniture is the same as that which lies behind many innovations of the age — speed. As we have grown accustomed to moving faster, a subconscious urge has driven us to believe that we have less time to spend and that we must so order our lives as to get many things done in the shortest time possible. Hence we have been forced into a more efficient way of living that depends on short cuts and on time- and laborsaving devices. Both the



"Dick" Whittington

Early Modern upholstered furniture was different but nonetheless cumbersome.



Man-Low

*Modern here has learned how to turn a corner. The sectional bookcase idea has been developed to greater flexibility by addition of various new kinds of units.*

number and the size of the rooms in our homes have been cut down and put on a so-much-per-cubic-foot basis, so that we cannot afford waste of either motion or space. Thus the time has come when we can no longer tolerate the luxury of oversized, overdecorated, and overcostly space-wasting furniture. A new style is seen to be imperative.

The furniture industry has long suffered from inertia. Modern design, therefore, was introduced gingerly and accepted hesitantly, for tradition argued that buying furniture is a serious matter — the event of a lifetime — and experiments should be shunned. Nevertheless, daring souls bought it. At once began a cleaning up of our homes, a dismissal of fussiness from decoration, and an introduction of restful, unornamented spaces. Sometimes, as was only natural, this process of simplification was carried too far, with resulting blunt bareness. Wrong approaches to a new style must always be expected. The progress which Modern furniture has made is indicated by the fact that six years ago at the wholesale furniture markets in Chicago, Grand Rapids, New York City, and High Point, N. C., Modern constituted less than 10 per cent of the manufacturers' offerings. Last year about 66½ per cent of all the furniture made and sold in the United States was Modern.

Householders in the lower income brackets were the first to see the advantages of the new style. Their homes are small and their families large. They cannot afford the luxury of waste space. Furniture with drawers, or cabinets under the bottom of a dressing table, for example, or a china cabinet with extra drawers and shelves, appealed to them. Another factor of influence was at work also. The lowest priced furniture, a sort of overelaborated Baroque called "borax" by the trade, violated all rules of good taste in its design. It was built to look worth a million dollars and cost only a few; so the flashier its appearance and the more eye appeal it had, the better the retail dealers liked it. The

customer had no chance. Borax was all he could get at his price. Even the cheapest well-styled reproductions were beyond his budget.

A venturesome manufacturer found that he could make and sell Modern design for less than borax cost, and a daring retail buyer, beguiled as always by price, took a chance. Curiously, he found that selling Modern furniture did not require much effort, for it was new and many of his customers wanted "the latest" without considering any further factor. Other persons were attracted by its compactness. Modern gradually became established, and for the first time in the history of design a new style started in the lower brackets. The ordinary course is for a new style to begin at the top, where it is adopted by the wealthy and prominent, and to work down slowly through the several price brackets as it is bought by the various strata of society, which struggle always to keep up with the Joneses. In its descent, a new style usually accumulates divers excrescences of ornament and variations of line, till at the bottom only a hint is left of the original design.

Modern, however, beginning with good design in the low price bracket, has had to work up laboriously into the higher grades, and it has not yet reached the top. If one wishes to spend three hundred dollars for Modern bedroom furniture, one can find a dozen or more well-designed bedroom groups. If one wants to spend three thousand dollars, one will find no Modern at that price in the stores, and must have it made to order. The rapid spread of Modern in the low brackets indicated that eventually all classifications would demand it, even though the upper strata still clung to their traditional periods. Manufacturers, therefore, began to redesign their traditional styles as sort of a compromise to lure customers away from the periods. Lower manufacturing costs incline producers toward Modern. Lower wholesale costs would incline retail dealers toward anything.

Casting about for a way to lead the traditionalists from period furniture, manufacturers bade their designers study traditional forms and "modernize" them by knocking off all ornament, leaving just the unadorned shapes. Thus they took a Hepplewhite chest of drawers, for example, left out inlay or cross-banding, omitted the medallion or swag ornaments, did away with beading or molding, and finally finished the piece in a color that Hepplewhite never imagined. This effect was achieved by bleaching, for in its effort to be as unlike the traditional as possible, Modern had promoted light-colored woods. Periods like Chippendale or Louis XV, full of Rococo curves and applied ornament, were quietly dropped. Simplified Adam and Queen Anne styles were stressed.

Meanwhile, designers of real Modern, grasping the principles of the style and seeing more of its possibilities, had gone ahead developing new forms of furniture. Their first departure from tradition was in utilizing all possible space, as in the dressing table referred to. A blanket chest built into the footboard of a bed, a stunt tried and accepted, is an illustration of spacesaving; a sideboard with a long drawer into which the folding



Robert E. Coates

*Plastic upholstery and a plastic coffee table with a unit group of bookshelves*

dining table may be stowed is another; a combination china cabinet and sideboard is still another. The construction of bookshelves, commodes, lamp stands, or telephone cabinets in the headboards of beds has become an ordinary feature of some manufacturers' products. All these innovations have been made without altering to any extent the traditional shapes of furniture — a table, a chair, a bed. A chest of drawers need not be limited to bedroom use. Even without any change of shape, it could serve equally well in a hall, a living room, or a dining room. Thus another step was taken when "open stock" groups of furniture were conceived; that is, a certain number of homogeneous pieces were sold to a retailer, and from these a customer might choose any number and use them anywhere in his home. The tendency in all these compromises and changes has been toward a greater flexibility, which is furniture's

necessary contribution to meeting the changed demands which are imposed by modern living conditions. The first real departure from traditional forms, and an inkling of the type of furniture that is best suited to modern needs, strangely enough, was a revival of the sectional-bookcase idea. Of course it was carried further than the makers in the early years of this century had dared to carry it, for, along with bookshelves, in its revival it included cabinets, cornerpieces, and end-pieces. The idea was to produce a composite piece of furniture, the form of which might be altered at need, by the use of variable units.

Although sectional bookcases achieved the flexibility sought, use of them was limited to the living room. The furniture into which they presently evolved was capable of use in many forms and places. It was only a step from the sectional bookcase to the greatest improvement which modern design has yet made — unit furniture.

If flexibility were practical in bookcases for the living room, why not for the furniture of other rooms? The bedroom, for example; why did it have to have a suite of a definite number of pieces, each with its particular use? Bedrooms are smaller than they were not so many years ago, and the scale of furniture suitable even in the early years of this century is not practical now. Why could bedroom furniture not be made on the same principle as that of the living room? It not only could be, but was. A householder now may buy bases of many widths with toppieces to correspond. Between these two elements he may assemble units of shelves, drawers, or cabinets, according to his needs. Thus he can construct a chest 30 inches high or 8 feet high, in a width to fit his space and with the kind of cabinet, shelves, or case of drawers to supply his needs.

Up to now, the evolution in furniture has gone only as far as is necessary to introduce a flexibility of form that traditional styles never had. This flexibility, however, is not enough to make a style. An artistic element must also be present. Otherwise, a carpenter could knock together a chest of drawers, put hinges on one side of a box, make a big box to hold a mattress, and that would be our furniture. The world — a part of it at least — for centuries has been accustomed to adorn its homes with those things agreed on as beautiful, and this consensus has decreed a style.

One of the causes for the creation of a new type of furniture in the Twenties was lack of a style. If you think back to that time, you will remember that the furniture, even though it was called by the name of a given period, had little resemblance to the characteristics of that period. Those chairs called Louis XVI, for instance, may have had round, tapering legs, but the proportions which gave that style its delicacy were not observed. Likely as not, the crest rail would have had an incongruous ornament which derived from quite another period. A chair purporting to be Chippendale might easily be found with Queen Anne legs. The previous style had been the decadent and ornate Victorian black walnut, created by heavy-handed designers for heavy-minded customers who demanded as the outward expression of their mentality furniture with solidity and weight. However ugly this was and however cum-

(Continued on page 292)

# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

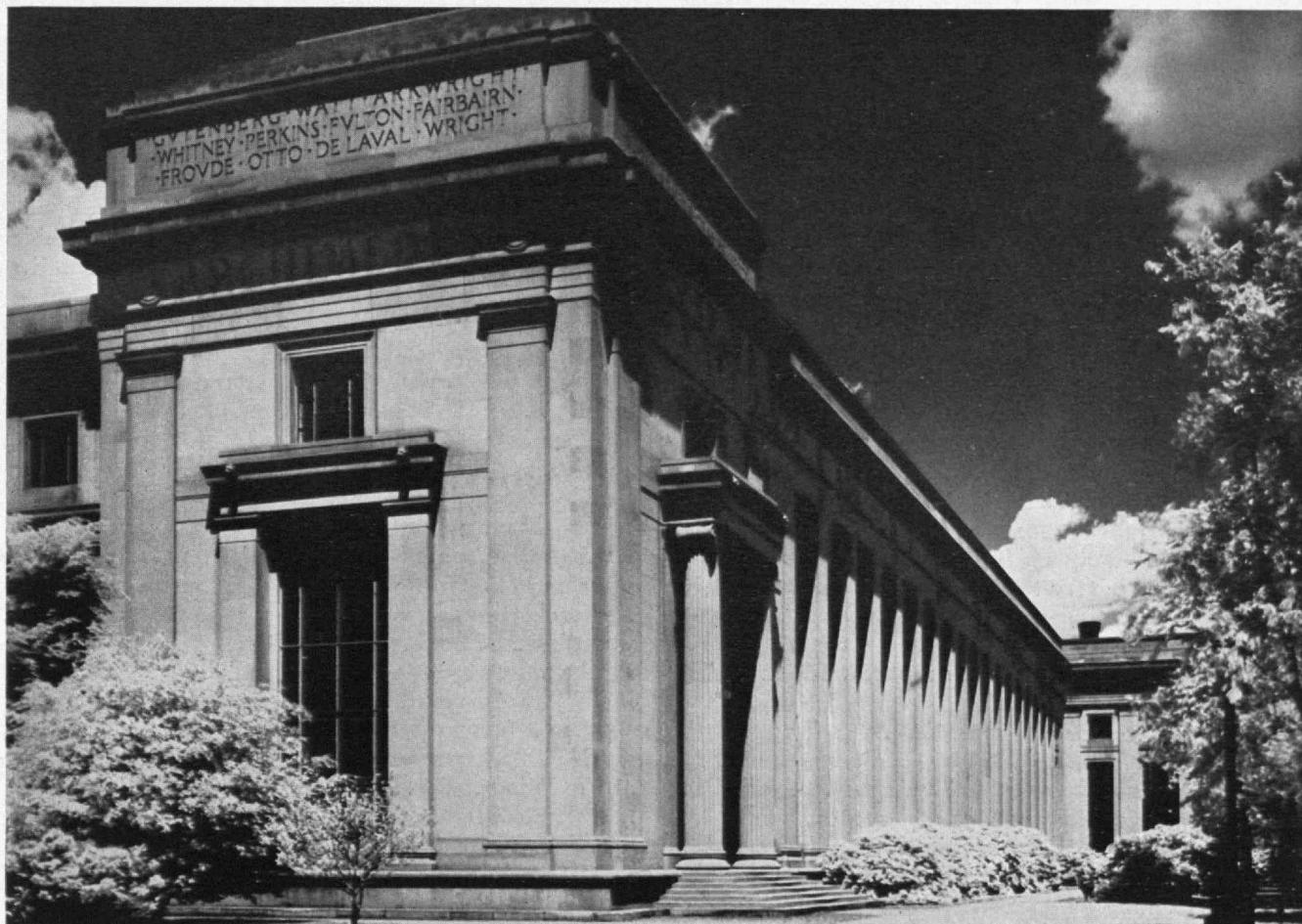
## Alumni Day 1942

### *Technology Alumni to Hold Traditional Celebration on April 25; Class Day, Regatta, Banquet to be Features*

APRIL'S final Saturday is expected to have the full zest of June's first Monday for Technology Alumni, who will gather for traditional Alumni Day festivities on the earlier date this year. Returns indicate excellent attendance at the events included in a program which has been trimmed to essentials in keeping with the times. Class Day activities will be held in Morss Hall at Walker Memorial in the afternoon of April 25, with Harry J. Carlson, '92, as speaker for the 50-year Class and Edward P. Brooks, '17, as representative of the 25-year group. The senior class will be welcomed to membership in the Alumni Association at these ceremonies and will be presented with its official class banner.

In keeping with tradition, President Compton, at the annual Alumni Day banquet at the Hotel Statler in the evening, will present a review of Institute activities and a preview of things to come. B. Edwin Hutchinson, '09, retiring President of the Alumni Association, will be toastmaster. Oliver P. Echols, major general, United States Army Air Corps, the principal speaker of the evening, will discuss matters of particular interest to engineers and scientists in the present emergency. All candidates for degrees in the Class of 1942 have been invited to attend the banquet, and General Echols' remarks may be expected to be of especial importance to them. The traditional stein symbolizing the day will appear at the banquet.

Crews from Technology, Harvard, Syracuse, and Boston University will be seen in the sixth Rowe Memorial Regatta on the Charles River basin in the afternoon, following the Class Day program. These regattas honor the memory of Allan Winter Rowe, '01.



*A foretaste of spring as infrared once saw it in the Great Court*

*Louis Rosenblum, '42*

Wartime conditions affecting Alumni, students, and staff of the Institute have led the Alumni Day Committee under Raymond H. Blanchard, '17, chairman, to abbreviate the program in such a way as to make possible the attendance of a maximum number of Alumni without disruption of their wartime routine. For this reason, the symposium and the luncheon which have been regular features of Alumni Day in the past have been foregone for this year.

### Commencement

**A**CCELERATION of the academic program of the Class of 1942 will make it necessary for the Institute to hold two graduation exercises this spring. Exercises for conferring the bachelor's degree will be held in Symphony Hall, Boston, on the morning of April 27, and graduation exercises for conferring the doctor's and master's degrees will be in Walker Memorial on the evening of May 28.

The commencement speaker for the graduation exercises of candidates for the bachelor's degree will be Samuel C. Prescott, '94, Dean of Science, who will retire this year after 47 years on the staff of the Institute. The invocation will be offered by the Rev. Michael J. Ahern, S. J., '06. Joseph F. Cook, Jr., '22, major, Coast Artillery Reserve, will administer the oath to officers of the Reserve Corps.

The baccalaureate service will be held in Walker Memorial at three o'clock on Sunday afternoon, April 26, and the baccalaureate address will be given by Leverett Saltonstall, Governor of Massachusetts. The service will be conducted by the Rev. Carl Heath Kopf, minister of Mount Vernon Church in Boston.

The commencement address at the exercises for conferring advanced degrees will be given by President Compton, who with members of the Faculty Council will hold a reception for the graduates and their friends immediately after the ceremonies.

### New Senior Schedule

**T**HE Faculty has approved a plan by which undergraduates now in their junior year will begin the work of the senior year on June 8, instead of next September. Thus, the Class of 1943 may be graduated at the end of the first term next February.

The Faculty also approved a proposal that during the war undergraduates be requested to obtain employment contributory to the war effort during summer periods when not engaged in academic work, and that in the fall they be required to submit a report describing the duration and type of summer work in which they were engaged.

No definite change of registration dates for graduate students is proposed at this time, but during the 1942 summer term every effort will be made to maintain graduate work equivalent to that which would normally be scheduled in the term beginning September, 1942. Graduate students will have the opportunity to expedite their training by enrolling in the summer term for a program of work which will be acceptable as partial fulfillment of the requirements for advanced degrees.

### Class Reunions Summarized

*The schedule of regular five-year reunions, involving this year classes of -2 and -7 years, is taking shape, with some adjustments occasioned by the earlier celebration of Alumni Day for 1942. Plans are as follows:*

- 1887 — 55th reunion will be held in June. Details will be mailed from class officers at a later date.
- 1892 — No official 50th reunion is scheduled. Class officers and members will participate in Class Day festivities April 25.
- 1897 — Executive committee of the Class has decided not to hold a reunion.
- 1902 — 40th reunion is tentatively scheduled for the Oyster Harbors Club, Osterville, Mass., June 5, 6, and 7. Further notice will be sent later.
- 1907 — 35th reunion will be held at the Oyster Harbors Club, Osterville, Mass., June 5-8.
- 1912 — Members expect to hold a dinner meeting sometime in June.
- 1917 — 25th reunion will be held at the Hotel Griswold, Eastern Point, New London, Conn., June 5, 6, and 7. Class will participate in Class Day ceremonies April 25.
- 1922 — 20th reunion will be held at the Sheldon House, Pine Orchard, Conn., June 5, 6, and 7.
- 1927 — Class members will meet at the University Club, Boston, at 4:30 P.M., April 25, to discuss the desirability of holding a reunion in June.
- 1932 — No formal reunion is scheduled. Informal meetings may be held in various large cities in April.
- 1937 — No formal reunion is scheduled. Informal meetings in various large cities in April are contemplated.

The "Fourteenth Webster Class Dinner" of the Class of 1888 will be held in June at 307 Hammond Street, Chestnut Hill, Mass. Details will be mailed later.

In so far as conditions permit, graduate subjects normally scheduled in the September through February term will be offered this summer.

The unusual range of subjects which will be available in the forthcoming summer session will facilitate the removal of undergraduate deficiencies and the satisfaction of minor requirements. Enrollment in the summer term will contribute toward the satisfaction of residence requirements to the same degree as similar enrollment in the fall or spring terms.

### Farewell Hangar Gymnasium

**T**HE Hangar Gym, well remembered by generations of former students as a center of training for naval aviation in the World War and later as a makeshift but serviceable gymnasium used chiefly for basketball, wrestling, and boxing, is to be demolished. In its place, at the request of the government, a new temporary building will be built at once for urgent war activities.

Thus a familiar landmark hastily built to serve the needs of war more than 20 years ago comes to its end at the insistent demands of a new war. Aside from the nostalgic twinges associated with the sights and scents peculiar to any well-patronized gymnasium, few tears will be shed over its demolition.

In announcing plans for the new building, President Compton said in part: "Fortunately the removal of the Hangar comes at a time when its major use for gym-

nasium purposes is largely over for the present academic year. As you know, the gymnasium in Walker Memorial is again available for student use, and it is hoped that some of the activities now centered in the Hangar Gymnasium will be carried on in the Walker Memorial gymnasium.

"While we regret that the demands of the war have made it unexpectedly necessary for us to decrease our athletic facilities by demolishing the Hangar Gymnasium, I am sure that students who use this will understand that a need of the highest priority dictates the removal of the Hangar. I venture to hope that its removal and replacement by a temporary laboratory building will hasten the time when the Institute can erect a structure more nearly adequate for our athletic needs, and one which will be not an unsightly fire hazard but an addition to our athletic plant of which we may all be proud."

### Tribute

**H**ORACE S. FORD, Treasurer of the Institute and for 20 years Secretary-Treasurer of the Eastern Association of College and University Business Officers, was the guest of a group of his associates from New England colleges at a dinner given in his honor on February 27. Ralph E. Brown, Comptroller of Boston University, presided, and paid a tribute to Mr. Ford, who has just retired as secretary-treasurer of the association.

Mr. Brown recalled that Mr. Ford first took office in the Eastern Association of College and University Business Officers in 1922, two years after its organization, and that he contributed notably to its steady growth in the intervening years. Mr. Ford was president of the association in 1930, and upon his retirement was elected honorary president.

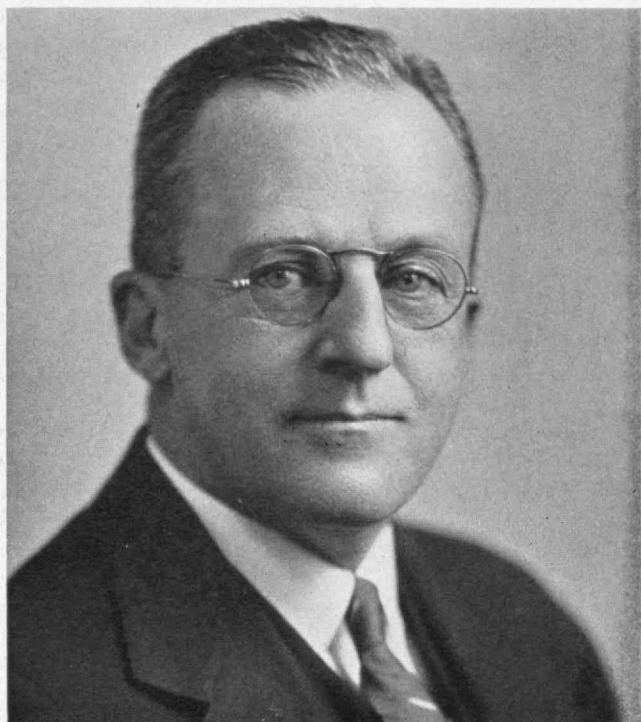
Lester L. Lapham, Assistant Treasurer of Brown University, speaking for the entire membership of the association, presented Mr. Ford with an engraved watch and chain as a symbol of the high regard in which he is held by the officers and members of the association.

### Freshening Breeze for Sailing

**T**HE presence of the senior class at the Institute this summer and the addition of hundreds of war research workers are expected to make this year the most active in the history of the M.I.T. Nautical Association.

In addition to its large fleet of dinghies, the association now has four Lawley 110-class 24-foot sloops. The fourth boat in this group has just been presented by the Class of 1917 as part of its class gift, and plans are being made to christen the new sloop *1917* at the opening of the spring sailing season. The others in this class are the *Morss*, the *Desmond*, and the *Schell*.

Racing teams representing the Institute will compete in all of the Inter-Collegiate Yacht Racing Association regattas this spring. These include the following: the Sharpe Trophy at Brown, April 18; the Owen Trophy at Harvard, April 19; the New England Associate Member Championships at Brown, April 19; the Mid-



HORACE S. FORD  
Treasurer of the Institute

*M.I.T. Photo*

dle Atlantic Associate Member Championships at Princeton, April 25 and 26; the Freshman Regatta at Brown, May 2; the Coast Guard Alumni Bowl at Coast Guard, May 2 and 3; the Middle Atlantic Member Championships at Navy, May 2 and 3; the Inter-Collegiate Yacht Racing Association Annual Meeting at Harvard, May 9; the Morss Trophy at M.I.T., May 9 and 10; and the Boston Dinghy Club Cup at M.I.T., May 17.

Most of the racing skippers who have represented the Institute in intercollegiate yacht racing since this fine sport was established on the Charles River basin a few years ago are now officers in the United States Navy. Not a few of them have already found that the discipline of yachting and the training in judgment for quick decision developed in small-boat racing are an excellent introduction to their professional work in the Navy.

### Nutrition Program

**T**HE program of the Nutrition Foundation, organized recently by a group of leading manufacturers in the food industry and associated fields to improve the food, diet, and health of the American people and their allies, was announced by President Compton, who is chairman of the board, at a dinner in New York on March 12.

In outlining the humanitarian objectives of the foundation, Dr. Compton described a long-range program which is expected to contribute importantly and permanently to human welfare.

"One of the encouraging features of scientific progress as distinguished from achievements in many other fields of human endeavor," said Dr. Compton, "is the fact that new knowledge and new art, once gained, remain permanently available for useful application and improvement generation after generation. When,

therefore, we think of improving health through better nutrition, we think not only of certain individuals or certain groups of people who are at the present time suffering from dietary deficiencies or maladjustments or whose health or general outlook on life can be improved through discoveries which may result from the work of this foundation. We also have to think that this improvement is permanent for succeeding generations of people. Improvement is cumulative, because the whole history of science shows that the more facts and tools there are available the more rapidly are men of ingenuity able to effect still further advancement, both in scientific knowledge itself and in the arts of its application to meet human needs."

Dr. Compton warned that nutrition will become increasingly a desperate world problem as the war proceeds and will be one of the greatest of all world problems in the period of reconstruction which will follow. "Consequently," he said, "it is most opportune that stimulus and support now be given to the study of nutrition at a time when some aspects of this study may be focused in directions which will be important in meeting war and postwar situations."

Dr. Compton emphasized the fact that the Nutrition Foundation is not a combination or pooling of company interests for the purpose of increasing financial gain either directly or indirectly. Neither is it intended to take the place of the research laboratories which each one of the founder companies maintains in the interest of its own developments. The purpose of the foundation is to aid in the discovery of scientific facts regarding nutrition and to make these facts available to the public and to organizations which produce or process food. In such a manner, the diet of the American people may be improved in the directions indicated by soundly established scientific findings. He added that one by-product of such a research and educational program in nutrition should be the protection both of the public and of the food companies against the demands coming from either mass hysteria over unscientific nutritional fads or actual unscrupulous efforts to profit financially under such conditions.

### *With The Council*

ELECTION of Miss Julia M. Comstock to honorary membership in the Alumni Association was announced at the 225th meeting of the Alumni Council, held in Walker Memorial on the last Monday in February. Miss Comstock's long association with the Institute and her varied and unstinting service to it and to the Alumni Association are recognized in this action. Formal observance of her election to honorary membership will be part of the program at the Alumni Day banquet on April 25.

After reports, including a summary of progress in plans for Alumni Day by Raymond H. Blanchard, '17, chairman of the 1942 event, B. Edwin Hutchinson, '09, President of the Alumni Association, introduced Julien W. Vose, '83, as newly elected Council representative for his Class, and Fletcher P. Thornton, Jr., '36, new Council representative for Spokane. Thereafter, the meeting was turned over to Jerome T. Coe, '42, chair-

man of the Institute Committee, who introduced speakers representing various undergraduate activities. They surveyed for the Council the work, the problems, and the significance of their organizations in the life of the Institute.

Speakers were Karl E. Wenk, Jr., '42, of Old Greenwich, Conn., for the budget committee; Franklin D. Mabbett, '43, of Madison, Wis., for the Walker Memorial committee; Clinton C. Kemp, '43, of Cambridge, for the Technology Christian Association; Albert F. Clear, Jr., '42, of Scarsdale, N. Y., for *The Tech* and *Vu*; Robert A. Metzger, '44, of Ventnor, N. J., for *Voo Doo*; James T. Harker, '43, of Dallas, Texas, for the *Tech Engineering News*; J. Henry Henderson, Jr., '42, of Alexander City, Ala., for "Technique"; Waldo F. Davis, Jr., '43, of Malden, for the 5:15 Club; John S. Arend, '42, of Newton, for the Interfraternity Conference; Francis B. Herlihy, '42, of Boston, for the Athletic Association; and Thomas T. Crowley, '42, of Cambridge, for the Nautical Association. Mr. Coe spoke informally on behalf of the dormitory committee.

The remarks of the undergraduate speakers were well received, and members of the Council agreed heartily with President Compton, who, in a brief concluding talk, emphasized the fact that undergraduate operations at the Institute express the essence of democracy.

### *Visiting Committee Report*

NEXT in The Review's series of Visiting Committee reports is that of the Committee for the Department of Electrical Engineering last year.\* When the Committee met on April 18, 1941, H. B. Richmond, '14, a member of a former Committee and a term member of the Corporation, was present to represent the Corporation. Mr. Richmond was elected acting chairman of the Committee in the absence of Harry P. Charlesworth, '05, Chairman.

Edward L. Moreland, '07, Dean of Engineering, and James R. Killian, Jr., '26, Executive Assistant to the President, attended the entire meeting. Harold L. Hazen, '24, Head of the Department, was present throughout the sessions, and other members of the Department were invited to attend the noon luncheon. By invitation of Dr. Hazen, Edward L. Bowles, '22, presented a résumé of the ultrahigh-frequency program, and Gordon S. Brown, '31, a résumé of the servomechanism projects. Outlines of other activities were given by members of the staff during an inspection of the laboratories.

Dr. Hazen had prepared in advance a report which gave an outline of the situation within the Department. This report was discussed in detail. After reviewing budgetary problems in the Department and discussing the importance of maintaining adequate salary levels for staff members, the Committee examined enrollment trends.

The indicated 35 per cent reduction from 1939-1940 to 1940-1941 in freshmen electing the Electrical En-

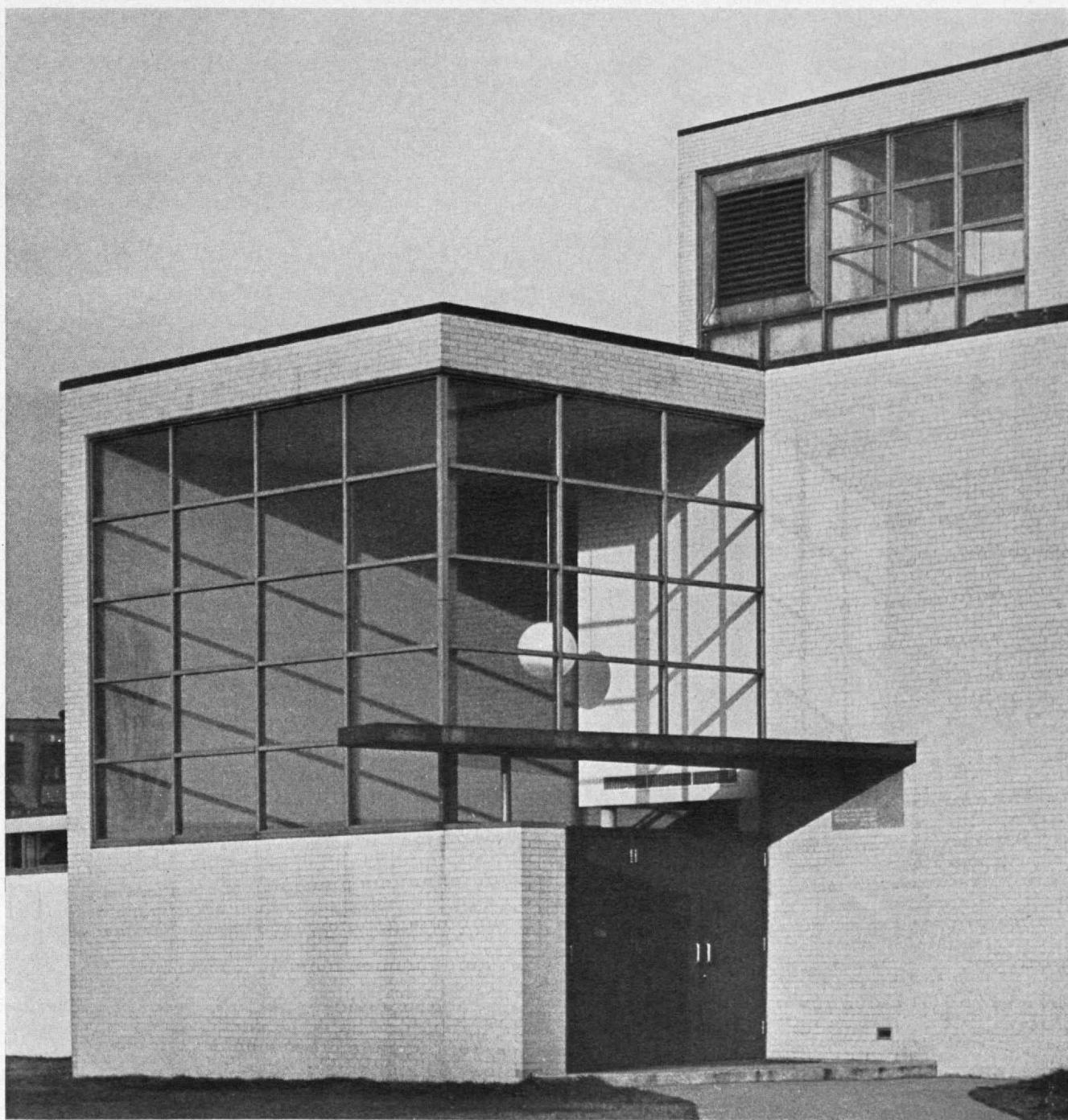
\* The members of this Committee for 1940-1941 were Harry P. Charlesworth, '05, Chairman, H. B. Richmond, '14, Acting Chairman, Henry E. Warren, '94, Philip H. Chase, '09, Vannevar Bush, '16, Edward A. Deeds, F. M. Farmer, and Reginald E. Gillmor.

gineering Course was discussed briefly. Professor Hazen stated that a brief survey of numerous sources of information concerning the reasons freshmen had for electing Courses showed no conspicuous reason why the electrical registration should have dropped, other than a popular emphasis on such fields as chemical and aeronautical engineering. In a sample of fourteen fraternities examined, the electrical registration among freshmen showed a 4 per cent increase over the average for the preceding three years, indicating that among this group, where the analysis of trends may be considered most influential, no significant discrimination appeared against the electrical Course. The Committee

concluded that more information should be given freshmen concerning the nature of the work and the opportunities offered in the various fields of engineering.

Attention was drawn to the apparent trend of interest, particularly among abler students and applicants for junior staff positions, toward what may be called "light currents" as against the "heavy currents," or power, field. Mr. Richmond reported on a simple study he had made the day before by interviewing twenty-four students of electricity. He found that their trend toward the "light currents," or electronic, field, was not based on a study of that field but rather had been ap-

(Concluded on page 294)



*Paul J. Woolf*

*Shadows, reflections, rectilinearity, many straight lines, and an isolated sphere in a study of the entrance to the Alumni Pool*

## AS BOUNDARIES BREAK

*(Concluded from page 265)*

its curriculum so as to be able to train men in the various specialties within the field. Closely related is economic and applied botany which, aside from its intrinsic biological importance, is destined to play a notable role in the establishment of hemisphere solidarity. South America has plant resources which have never been tapped and which may become of economic importance to both Americas. Recognizing the value of such factors both in war and in peace, our government has initiated an educational and research program in nutrition and economic botany having special application to the needs of South America. It is hoped that the M.I.T. will be able to assist in this pioneering effort both through teaching and research at home, and through students and representatives in the field.

## SENSE AND SHELTER

*(Continued from page 267)*

If no high degree of organization exists within the individual localities, the achievement of it on a larger scale is hardly to be expected. The only units in the home-building field operating on anything like a national scale are labor and the manufacturers of materials and equipment. With the exceptions to be noted later, no large-scale home-building organizations have activities spreading over anything more than restricted localities. Even labor is by no means completely organized; much of it is nonunion, especially in the smaller communities, and direct contact among the organized locals is practically nonexistent. Some of the manufacturers of materials and equipment rank among the foremost corporations, but not even the largest provide more than about one-sixth of the minimum requirements for a house. Still, each manufacturer either maintains his own chain of dealers or, more commonly, sells through independent suppliers in each community, and each dealer handles the products of a number of different manufacturers. Consequently, little direct manufacturer-builder contact is present, let alone direct sale from manufacturer to homeowner. Materials and equipment pass through a number of hands before reaching the ultimate customer, thus making a costly chain which is more or less inevitable in the present state of the industry. Few, if any, local dealers carry a complete line of materials and equipment, and few attempt to provide any building service to the owner other than plan catalogues of indifferent merit.

A further serious lack of integration exists among sizes and dimensions of materials. Although manufacturers of particular materials such as lumber have achieved a degree of standardization as to grade and size, there is no accepted set of universal standards for all materials and equipment. House planners consequently are seldom able to base their designs upon some constant or module or to make their plans fit such standards of size as do exist. The result is a lot of cutting, fitting, and waste, both of materials and of labor.

Hardly surprising is the fact that of the homeowner's bill for materials and equipment only little more than 40 per cent represents cost of production. The balance is the cost of distribution, of getting it from the factory into his house. If ever a challenge to distribution engineering existed, it lies in marketing the complete service, materials, and equipment for medium-cost housing.

As a source of high cost, the handicraft practices and techniques of the building industry rank second only to its unintegrated, disorganized state. This is the most striking aspect of the industry and has received both the widest publicity and the greatest attention. Even the most obtuse observer cannot help contrasting the carpenter with his saw and hammer or the bricklayer and his trowel to the assembly line of an automobile factory. The quick conclusion is obvious: Put houses through a similar assembly line and costs will come tumbling down. And while the handicraft methods are being junked, junk everything else too — traditional materials, techniques, plans. Start everything from scratch and produce some strange new creation which is guaranteed to make home life an immaculate machine existence in a machine age, though it may not stand up to the demands of time and the weather. Such at least seems to have been the theory motivating many of the downright fantastic schemes which masqueraded under the name of prefabricated housing at numerous exhibitions and fairs during the past ten years.

No quarrel can be provoked with the basic premises of prefabrication as properly understood. The soundly conceived systems of prefabrication which have proved their worth and are today actually on the market indicate the directions which the housing industry must follow if construction costs are to be reduced. These are the following: a greater degree of shop fabrication with power equipment, and less hand fabrication in the field; much better planning and routing; simplification and standardization of structural elements; co-ordination and interchangeability of parts; some fundamental module upon which all elements, both structural and mechanical, are based; quick assembly; demountability; and re-use. These elements, with the exception of demountability and re-use, are essential to lowered costs of new construction whether the product is to be a standardized house or a system of units capable of assembly into distinctive arrangements. Demountability and re-use are of importance in combating obsolescence. With reasonable care, a house does not wear out, but it does become obsolete. If the parts could quickly and easily be taken apart and reassembled with a minimum of labor and new units into a new pattern to conform to changing requirements, the value of such a house could more easily be maintained. Or the parts could be reassembled on a different site, thereby affording practically new construction for a new family, at considerably lower cost, and leaving the old site free for entirely new construction. Few of the prefabricated houses now in existence can readily be demounted, but the trend is rapidly moving in that direction.

Before any system of standardization and simplification can be successful, however, the distribution system to make it readily available and to bring it to the atten-

*(Continued on page 282)*



*The fate of a nation was riding that night*

WE who carry on a great American name face the tasks ahead in a spirit of hope rather than sacrifice.

For we know from the example of Paul Revere that the reward of effort is not merely victory. It is a better way of life for many more of us. We have found that looking back on a glorious past brings calm confidence in the future.

To commemorate the 167th anniversary of Paul Revere's Ride, we

have prepared a de luxe brochure of Longfellow's poem, with four beautiful colored prints by the famous illustrator, Joseph Boggs Beale, in the belief that many Americans will wish to own them.

We will send it to you on receipt of 25¢ in coin or a 25¢ Defense Stamp and the net proceeds will be divided equally between the Army and Navy relief societies as a contribution from patriotic Americans. Use the coupon below for convenience.



REPRODUCED ON THIS PAGE ARE THE FOUR 8 1/4" x 9" PRINTS YOU WILL RECEIVE IN FULL COLOR, READY TO FRAME.



Revere Copper and Brass Incorporated 211 Park Ave., New York, N. Y. Enclosed is 25¢ in coin or a 25¢ Defense Stamp for my copy of the Paul Revere anniversary brochure.	
Name.....	.....
Address.....	.....
City.....	State.....

## SENSE AND SHELTER

(Continued from page 280)

tion of the public must be organized. Organization at once means a much higher degree of integration within the industry, at least locally if not on a larger scale, than exists today.

Certain legal restraints must be removed before most of the advantages inherent in simplification, standardization, and shop fabrication can be realized. Since all progress represents at least an evolutionary departure from present practice, running afoul of building codes as they exist today is almost sure. Although codes are necessary, they do hamper progress seriously by freezing existing practices into law, where having them changed is almost impossible. Building, to be dynamic and progressive, must be free to adopt sound new methods and materials as they become available, without being required to go through the cumbersome procedure of having the building laws amended by the usual glacial processes, subject as they are to political influence.

Building codes must become more quickly responsive to changing practice as its value is proved. Complicating the problem is the fact that codes not only freeze existing practice into law; they freeze local or regional custom and tradition, which means that codes are anything but uniform. Most codes are drawn up by a committee consisting probably of a local builder or two, a dealer in materials, perhaps an architect or engineer, the fire chief, and a lawyer to see that the form is correct. They are bound to reflect local custom and tradition even if one or two "standard" codes and the usually antiquated code of the nearest big city are used as guides. Moreover, the whimsies of the local building inspector play a large part in the interpretation of the code. Means must therefore be found of introducing into building codes both adaptability and a much larger measure of uniformity than exist today. Neither will be easy of achievement since special enabling legislation by the states must generally be secured first, and then the local codes must be changed to conform. Maybe state-wide, uniform codes, affirming the fundamental police power of the community to regulate building from the standpoint of safety, but leaving the details to be promulgated and continuously revised by professional, nonpolitical boards of review, offer the quickest solution to the problem if the states can be brought to adopt such codes.

Anyone who has been through the process of land purchase and home financing can testify that much needs to be done to simplify the details and to cut the costs involved. Although the situation is not nearly so bad as it was a relatively few years ago when the second mortgage and short-term first mortgage with renewal fees made financing a headache, legal and financing costs are still important items, what with title searches, recording fees, deed transfers, and the rest. The interest rate, particularly on long-term mortgages, is a vital factor in determining the value of house a family can afford. For instance, on a typical twenty-year mortgage the total interest charges may run to well over 50 per cent of the original loan and a 1 per cent difference in the rate may easily mean a 10 per cent difference in the

value of the home which a given monthly sum will carry. Ten per cent of the total cost may in turn mean the difference between a desirable and undesirable location, or between a satisfactory and unsatisfactory house. Every reduction in financing costs is equivalent to a reduction in construction costs, and such reductions are essential if satisfactory medium-cost housing is to be attained. Financial institutions cannot, however, be expected to take risks at a low rate of return on houses if much of the cost of them represents inefficiency and waste, and their value may rapidly decrease through obsolescence. Here again a real reduction in charges depends ultimately upon closer integration and improved, flexible construction techniques.

There are encouraging indications that the industry is beginning to be alive to the need and is taking steps, very tentative to be sure, toward pulling itself together. Two principal approaches are being followed. One is complete centralization of construction in a factory, resulting in entirely panelized houses which need merely be erected at the site by a skeleton local crew. Mass production of standardized units and models in large plants feeding into the local assembly plants is visualized. This is the goal of the "prefabricators" as that term has customarily been used. Their principal problem, in addition to overcoming a strong if often unfounded prejudice against "tin-can" houses, is the knotty one of building up a system of dealers and erectors to market their models in the face of an ancient existing industry, strongly established even though not particularly well organized. A number of such organizations are making determined efforts to establish themselves and to expand.

The defense-housing demand is giving a powerful impetus to those prefabricators whose systems of construction meet governmental specifications, one of the most important requirements being demountability. While demountability is essential to allow removal of potential slum areas from regions where emergency housing will not be needed after the war, wartime experience with demountable construction is bound to have a profound effect upon peacetime practice. Furthermore, with some tens of thousands of houses required at once, mass production methods are being given an opportunity to show their real worth and to iron out many of their kinks. The question of how to market mass-produced housing in the private field remains, however, and will be one of the largest problems to be solved when the emergency and defense demands are in the past.

The second approach toward integration aims to co-ordinate the existing elements of the industry into a unified whole, offering to the public a complete home service from planning to finished house, attempting to reduce costs by eliminating much of the waste, confusion, and duplication of effort which characterize the industry today, but not offering either a prefabricated or a stereotyped speculative house. Architect, builder, materials and equipment dealer, subcontractor, real-estate operator, and financing facilities are co-ordinated into a single unit to which the prospective home builder may go with his problem and in one spot find all the

(Concluded on page 284)

## "What d' you mean —UNIFORM?"

HERE are four of the many different uniforms that Uncle Sam issues to his Army. *But there's no uniformity!* Each man is outfitted for his special job.



Home defenses can't be uniform, either. *Family life insurance programs should be tailored to the personal needs of the people involved.*



- That's why New England Mutual policies are unusually generous and *flexible*. That's why our friendly *Career Underwriters* are trained to *individualize* your insurance.

Our soldiers don't wear shorts in Iceland . . . or snowshoes in Hawaii.

Ordinary Life is the right policy for one man . . . Family Income the best buy for another.

In any case, *you need the peace of mind* that only *planned* insurance can provide—the *steadfast protection* that this first chartered mutual company has furnished through the wars and depressions of a century. Call one of our *Career Underwriters* for the planned protection that is best for *you*.



## *These tailors give you protection made-to-measure!*

The men listed below are alumni of your own college. They enlisted with New England Mutual because they saw an opportunity for constructive service on many fronts.

They've been carefully taught how to tailor individual insurance programs—programs that *fit* and provide protection for *life*—programs that can easily be altered as families and finances grow.

If none of these men is near you, turn to the New England Mutual office in your city. You'll find new friends there—competent custom-tailors—whose suggestions are uniform only in the sense that they're uniformly *good*!

**RAYMOND P. MILLER, '18,**  
Salem

**ARTHUR C. KENISON, '19,**  
Boston

**BLAYLOCK ATHERTON, '24,**  
Nashua

**DAVID M. NASON, '33,**  
Boston

We have a number of opportunities available in various cities, where capable field men have left for military service.

If the draft gave you a 3-A classification, and you are not particularly happy about the future your present job offers, why not consider a career where compensation and service go hand in hand? Or perhaps you have a friend who might be interested.

In either case, just write to Wm. Eugene Hays (Stanford '26), 501 Boylston St., Boston, Mass., for further information. There's no obligation, of course.

**New England Mutual**  
*Life Insurance Company of Boston*



George Willard Smith, President

Agencies in Principal Cities Coast to Coast

THE FIRST MUTUAL LIFE INSURANCE COMPANY CHARTERED IN AMERICA—1835

## SENSE AND SHELTER

(Continued from page 282)

professional advice, building service, financing, materials, equipment, and legal assistance he now spends much time and effort to assemble for himself. So far, this type of organization has been achieved only partially within some localities, and a similar correlation of effort on a national scale has not been attempted. This approach has the advantage of making use of the existing home-building facilities which are to be found in every community, but faces the problem of overcoming established customs in every locality and of educating independent operators to work together as a unified team.

Before any great degree of integration can be reached, the industry will need large numbers of men with special training for the task. One basic reason why home building remains split into multitudinous specialties is that very few individuals in it have the necessary broad background to weld the fragments into a unified whole. Having architectural or engineering ability, understanding how to erect a house, knowing materials, being able to install equipment, possessing familiarity with the intricacies of law and finance — none of these by itself is enough. The co-ordinator must have a mastery of the basic principles of them all in addition to possessing a much sounder grasp of business organization and marketing than is usually found among the present operators in the industry. The overwhelming majority of these are craftsmen who have excelled in their specialties and therefore have set up businesses for themselves, but who have had no opportunity to make a more extended study of the complex housing field. Broad-gauge operators are needed in every community if even local integration is to be brought about to a sufficient extent to carry home building into the medium-cost field. The need will be still greater when further integration on a more than local scale emerges. Unlike highly centralized industries, home building, spread out over the entire country, needs trained men in large numbers diffused over a large area instead of concentrated in one spot.

If, then, the great but sprawling home-building industry is to realize its postwar opportunity and at the same time is to act as a powerful balance wheel to help carry through the transition from wartime to peacetime conditions, it must pull itself together all down the line. Educating the new crop of co-ordinators in the new approach must be undertaken. Archaic restrictions of every kind must be thrown off. These things all take time, but the opportunity to make a start is provided by the present enforced lull in building, a cessation which is only creating a larger potential demand for the future.

## A CLOTH OF GLASS

(Continued from page 269)

about Sandwich glass, and Ruth Webb Lee, in *Sandwich Glass; the History of the Boston & Sandwich Glass Company*, offers a detailed account of the company itself. The New England Glass Company also produced glass of the finest quality. Among other exhibits in which its

products were displayed was that of the Centennial Exposition in Philadelphia, where specimens of New England's glass compared very favorably with those sent over by the British.

The exposition occurred at the very end of the second era of glass, but several points about the New England Glass Company's participation in the Boston celebration of this event reveal causes for the large number of early failures. The local celebration consisted of a great parade arranged by representatives of different trades. In regard to that of the New England Glass Company, the following background is recorded:

It seems that the idea of a display arose in the minds of some English workmen . . . a committee of whom waited upon Mr. Libbey, only a few days before the 17th, and told him that in trade processions in London they had seen the finest show made by the glassmakers, and they guaranteed a similar success here. "But," said Mr. Libbey, "do you wish to celebrate the death of your grandfather?", referring to their nationality. The Englishmen, like our southern brothers, considered that hatchet buried and went to work with a will.

Mr. John B. Curtis made a furnace about 27" in diameter, of clay and firebricks . . . containing 3 crucibles of clay . . . containing about 2 pounds of glass each. This was placed in a large wagon, the floor of which was covered with clay and then with iron and the furnace and its iron chimney secured by strong iron guys to the sides. . . .

On the morning of the 17th at four o'clock, the men gathered at the works to prepare for the procession.

Continuing, the account vividly portrays this exhibit. All the men wore multicolored glass ornaments, some even sporting glass rods bent so "that they could be worn as a sash around their right shoulders and under their left arms." On one wagon were specimens of glass on terraces of shelves, and another "carried samples of chemical, fancy and painted glassware." In a carriage rode Mr. Libbey, the superintendent at the time, and some other gentlemen. "In another rode 4 veteran workmen: N. W. Langley, aged 76 years, who went to work in the yard in 1824 . . . ; Chas. F. Hastings, 72 years, who commenced in 1817 . . . ; J. M. Hastings, 70 years . . . ; and Wm. S. Fletcher, 65 years, who began in 1825."

It was the wagon that transported the furnace, however, which attracted the crowd. Even though the open-air draft and the jarring of the wagon prevented the furnace from keeping hot enough to allow the melted glass to be worked all the time, "the men had a supply of glass tubes with which, by heating over the crucibles, they blew glass balls, some of colored glass, which they threw to the multitudes around. They had also glass rods which they heated and bent and twisted with their pincers and tools, and enjoyed some fun with in passing them to eager boys and spectators who took them hot, and tucked them very suddenly under their arms to avoid burnt fingers."

A good time was evidently had by all, but in reality the procession was the "swan song" of the New England Glass Company, although an inscription on one of the wagons, referring to an ineffectual effort to close the works in 1874, read: "We expect to celebrate our Centennial." This optimism was not justified, for the company closed in 1877.

(Continued on page 286)

War problems emphasize the assistance this consulting research organization renders in meeting rapidly-changing industrial conditions and in preparing for future changes.

## Arthur D. Little, Inc.

Charles River Road at Kendall Square

Cambridge, Massachusetts

## A CLOTH OF GLASS

(Continued from page 284)

Several interesting points emerge from the foregoing account: First, the great variety of glass baubles suggests the experimentation and diversification of makers of flint glass. Second, the account indicates that furnaces did not co-operate especially well with the amateur or the novice; they were tricky contraptions, which required competent handling and very particular conditions — one of the reasons for so many failures. Third, and arising naturally out of the second, good workmen were hard to get and needed not only long experience but early training in the business. The four veteran workmen who rode in the Centennial Exposition parade, for instance, commenced work with the New England Glass Company during the first eight years of its existence, some probably after apprenticeships in England, and they remained the backbone of the company because they were irreplaceable with natives.

In the first era of glass in Massachusetts, this last difficulty accounted for a major part of the failures in all kinds of glass manufacture. Even though building glass and bottle glass were always primarily commercial ventures, to be successful they required highly skilled and competent men. Flint glass, in addition to its commercial aspects, required a high degree of artistry on the part of workmen, since the value of this glass lay as much in its design, shape, and color as in its purity. Considerable experimental work was done in both the New England and the Boston and Sandwich companies in their continual efforts to produce new and varied products which would appeal to the public.

Surveying the difficulties involved in getting European glassworkers to America makes clear why there were not enough to go around. The task of the American employer was difficult — particularly on the Continent, where vestiges of the feudal system, coupled with the system of patronage prevailing in semi-independent European states, made hazardous the emigration of skilled glassworkers, the men themselves being liable to severe penalties if caught. Europe cannot be blamed

for this attitude, since good men were the product of many years of training and apprenticeship, and hence could not easily be replaced.

The first group, brought over for the Boston Crown company, were Dutch. Gaffield says little of this expedition, but enough to substantiate the tradition that to New Englanders anything not New Englandy is a natural object of suspicion:

A few days ago I saw Mr. Samuel Slocomb, former agent of the Baywater Glass Co. . . . and obtained from him some interesting information about the Boston Crown Glass Works in Essex St. . . . His mother told him that when the Dutchmen arrived who were to work as blowers and glassmakers, they were escorted by the people of the town from the vessel at Long Wharf through State and Washington Sts. to Essex St. She said they were a dirty looking set of fellows. . . .

How these men were induced to risk the voyage is not related, but another incident gives the clue to the dangers attending the venture:

I saw today Mr. John M. Kupfer, who is the son of Mr. Chas. F. Kupfer, who was connected with the Boston Crown Glass Co. in Essex St. nearly eighty years ago. He gave me some interesting information concerning these Works. His grandfather Lindt had come to the U. S. about the year 1792. His maternal and paternal grandfathers were born in Schoen, in the Duchy of Brunswick, and his maternal grandfather came from Alten Gronau in the Electorate of Hesse. Mr. Chas. F. Kupfer came over with Mr. Lindt and married his daughter. He afterwards went back to Germany and brought over a set of workmen to America. They came from the glass works of the Duke of Brunswick and ran away by night. It was dangerous business at that time to entice away workmen, and men in Mr. K's position had to work very carefully to avoid arrest and imprisonment.

A little later an enterprising Englishman, Thomas Cains, introduced a novel method of recruiting glassmakers, one from which benefits were derived by both parties and in which recruiting risks were nonexistent:

In 1812 Thomas Cains, English, came to America and leased part of a building put up by the Boston Crown Glass Co. on B St. between 1st and 2nd Sts. in South Boston. Work-

(Continued on page 288)

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## A CLOTH OF GLASS

(Continued from page 286)

men were prisoners taken at the battle of Plattsburg and paroled expressly to work for Cains. After the close of the war of 1812 Cains obtained other paid-off English soldiers as workmen in the first flint glass factory in the U. S.

Gaffield is careful to place the responsibility for this statement — that this was the *first* flint-glass factory in the United States — on the shoulders of Mr. Cains, already mentioned in this connection. The assertion, though unsubstantiated by any further evidence, is quite possibly true, for in view of the difficulty of getting artisans skilled in making glassware to emigrate to this country as late as 1800, it is more than likely that only ordinary kinds of glass for purely commercial purposes had been made up to that time. The only reference Gaffield has made to any possible relation between Virginia and Massachusetts glass explains that "a Scotchman named Richmond came over to our country to make crown window glass and first made it at Richmond, Va., and afterwards at Cheshire, Mass." Moreover, no mention is made of any flint-glassware exhibits at the Centennial Exposition aside from those of foreign countries and Massachusetts glass companies. Whether Massachusetts was first in this field is hard to determine, but certainly, during the Nineteenth Century, it was pre-eminent in flintware. As I have pointed out previously, two companies were mainly responsible: the New England Glass Company, and the Boston and Sandwich Glass Company.

While their records are impressive, those of other companies are not. Much importance has been attached to the difficulty of obtaining good workmen because a lack of them was probably the prime cause for the many failures. Other causes, such as carelessness, fires, ignorance concerning proper ingredients, and overexperimentation, stemmed from the quality of the available glassworkers — particularly the foremen and managers. These facts, coupled with too much speculation and false optimism from those whose capital supported various glass ventures, constituted the flimsy roots of the tree of failure. A further cause which helped to loosen these roots was the westward trek of the midcentury, which saw the manufacture of glass get under way in states of the interior where good sand and ample fuel were available — states where the industry was to center.

Mismanagement, however, rather than the westward expansion, was the more virulent: Fires destroyed much property, and losses were heavy. The Boston Crown company, for instance, did exceedingly well for a time. Its history indicates clearly the causes of failure as well as the inducements which led to so many attempts; profits, if a venture succeeded, were enormous:

When it [Boston Crown company] was first established the whole stock of the company was about \$5,000, in shares of \$500 each. After some years, it was incorporated. Its shares advanced to \$3,000 in its days of prosperity. But its good fortunes wavered soon after it was incorporated from two causes. First, a board of directors was chosen. A president, Mr. John Hunnewell, with a salary of \$1,200 at first, was appointed, and a clerk, Mr. John S. Foster, with a salary of \$1,500.

Second, the practical wisdom of Mr. Chas. F. Kupfer was over-ruled by the theories and experiments of the new directors and officers. Deming Jarves thought it wrong we should import clay when enough could be found here. So an experiment was made with American (probably N. J.) clay, which resulted in a serious loss of pots. Deming Jarves said that the clay was not properly kneaded. A kneading machine and a horse were purchased and another experiment made, which resulted in a similar loss. Other foolish losses were made, and when the factory failed, it had on hand \$150,000 worth of rusty glass.

Further evidence is available: "The works accomplished a successful business until a Mr. Forte was chosen manager in about 1824 or 1825. He did not understand the business and the concern made a bad failure in a few years." Gaffield makes clear that it was not so much the salaries of directors as their unfamiliarity with the glass business which was the chief root of trouble.

The death struggles of the Boston Crown company, like those of so many others, were violent. In 1824 it proceeded to take over the flint-glass factory of Thomas Cains, who had rented his buildings from the Boston Crown company in the first place. It reorganized into two companies, the South Boston Crown and the South Boston Flint Glass companies, to make these two kinds of glass. Only three years later this glass house of cards collapsed, "the companies owing when they failed \$750,000," a tidy sum in those days. The lure of the *ignis fatuus* remained strong, however, for in 1880 William Cains, son of Thomas, said that "since then [1827] about fifteen firms had used their property — *none successfully*." (The italics are mine.)

How much money was lost in this one set of glass factories we do not know, but we can get an idea by looking at some figures representing losses in other companies during the second era of glass speculation, which will be discussed in a succeeding article. Gaffield recorded during the second era many more facts and figures regarding losses. The average loss for the first era was high, and if we multiply it by 15 and add to it the \$750,000 lost by Boston Crown, we shall get an approxi-

(Continued on page 290)

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## A CLOTH OF GLASS

*(Continued from page 289)*

mate idea of the total sum of money which came to be consumed in the furnaces of just one set of glass factories.

Nor was this the only glaring example. For instance, the old Tremont Glass Company, which later turned into the American Glass Company, "has repeatedly failed of success." Some men, it seems, were hard to discourage. The Chelmsford Glass Company failed in 1825, was re-formed, carried on for three years, and failed again, whereupon the works were torn down and materials and tools carried to Pembroke, in which place the manufacture dragged on for several more years. Poor workmanship is evident from an entry referring to the Chester Glass Works, founded in 1814: K. M. Crandall reported that his father, the manager, had "left in consequence of trouble with the pots, which were sometimes badly made or cut by workmen or others." The New England Glass Bottle Company functioned for four years — from 1826 to 1830 — and was subsequently turned into a kerosene factory.

A few final facts and figures may serve to make clear that glassmaking was neither a safe speculation nor a profitable venture for the dilettante. By the end of the first era, only two companies — the New England, and the Boston and Sandwich — had shown continued promise of success. The Boston Crown, because of its initial head start, could offer a record of some 40 years in business, but its failure, in spite of this advantage, is all the more obvious. If we except these three companies, the average length of life for glass companies — such as the Adams Glass Factory, the Boston Porcelain and Glass Company, the Farmers' Glass Manufactory, the Ludlow Glass Manufacturing Company, the Cambridge Glass Company, and others — as indicated by those few for which figures are given, was three to four years.

As I have said, several men needed more than one lesson, but for the most part, after sometimes three or more searings, they were burned to a crisp. One man, however, a veritable phoenix arising from his own ashes, continually reappears in the record of Massachusetts glass. In view of the difficulties connected with the manufacture of glass, his determination to carry on is all the more commendable. Deming Jarves, as has been pointed out in an excerpt from the Gaffield journal, was greatly responsible for the collapse of the venerable Boston Crown company because of his insistence on questionable experiments with native materials. Before Boston Crown failed, he was a cofounder of the New England Glass Company in 1817; during the death struggles of Boston Crown he helped to found three more concerns — the New England Crown Glass Company (1824), the New England Glass Bottle Company and the Boston and Sandwich Glass Company (1826); and in 1864, during the second era of glass, he established the Cape Cod Glass Company.

Undoubtedly Deming Jarves did much to forward the glass industries of Massachusetts, and his experiments and ideas greatly contributed to the pre-eminence of glass from the commonwealth. In the final analysis this addiction to a cause, determined and devoted as it was,

cannot be credited with success. For the glass industry of Massachusetts was caught in quicksand before it was fully matured. Deming Jarves symbolizes the eternal hope that prosperity is just around the corner.

If financial profit is the ultimate gauge of success, then Gaffield states the fundamental nature not only of Deming Jarves but of the glass industry as well, in the words of Mr. Libbey, superintendent of the New England Glass Company in 1874. Libbey did not take into consideration the achievements of Jarves or the tenacity with which Jarves pursued a course in which material gain was secondary, but, as Gaffield quotes him:

Mr. Libbey does not think much of Mr. Jarves' work on glassmaking. He said that Mr. Jarves was one of the founders of the New England Glass Co. in 1817, then established the Sandwich Glass Works, on the mistaken idea that money would be saved by building a factory near the fuel (wood), and after many expensive and useless experiments in the way of buildings, wharves, etc., he left this company and formed the Cape Cod Glass Co., in whose works he had invested perhaps \$100,000. The fires of these furnaces went out when Mr. Jarves died a few years ago and have not since been lighted, and the works would not bring perhaps the value of the mortgage of \$10,000 now resting upon them. Mr. Jarves lived to about the age of eighty years, and Mr. Libbey thought he ought to have left the glass business twenty years before he died. He was infatuated with the idea of making a success in his business, and he did not accomplish it, at least in a pecuniary way.

(To be concluded)

## FIRSTHAND KNOWLEDGE

(Concluded from page 271)

as a rule, scant knowledge of actions and things. Some teachers and writers fall in this group. If the student relies too much upon their judgment of the comparative values of different kinds of learning, he is likely to run into trouble. The able teacher of an art or a science long ago found language alone inadequate. Pictures with descriptions he knows to be better; moving pictures better still; practicing or demonstrating before the pupil better than moving pictures; but, best of all, having the student do the operation himself, at first under supervision.

I think knowledge relating to any human activity can be evaluated, according to a scale of 100, about in this fashion:

- (1) The best knowledge is that acquired by doing or practicing, rating 100.
- (2) The next best comes from being present when the operation is done, with the privilege of asking questions, rating 25.
- (3) The next is that acquired from talk with a doer who tries to impart knowledge about the operation, rating 15.
- (4) The next is from writings by a candid practitioner who knows, rating 10.
- (5) The next is from writings by a candid compiler, rating 5.
- (6) The next — or worst — is from a compiler who seeks to establish some thesis, rating 0. When he seeks to do so by the use of statistics, the rating is —50.

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## FURNITURE IN TRANSITION

(Continued from page 274)

bersome, it was a style, even though a very bad one. The reaction to Victorian black walnut in the 1880's demanded a lighter feeling in furniture, but designers in this country had started to go haywire about 1830 and had lost their sense of proportion and their delicacy of touch. Efforts to rise to the demand resulted only in furniture designs which were anomalous and heterogeneous adaptations of what had gone before.

Manufacturers could not appreciate that the American furniture of the Eighteenth Century had a beauty of its own because its makers had a certain instinctive sense of proportion and an inherent feeling for delicacy, both of which Nineteenth Century designers lacked. It never occurred to them to draw accurate copies of the designs of former periods. In fact, it was not till about 1930, and then only because an interest in antiques was sweeping the country, that the manufacturers of commercial furniture began to make accurate reproductions of the good furniture called "antique."

The first Modern design, therefore, was a reaction against the impure design of the day, and its promoters, either in Central Europe or in Paris, set about creating something new. The new style, they agreed, must be different. A cardinal principle of their doctrine was that nothing they produced could have any decorative element of the past. They dispensed with all ornament, and simplified forms where they could, even to the point of ugliness. Borrowing a term from the architects, they dubbed their furniture "functional," meaning to them stark simplicity.

As I understand it, functionalism to an architect, means the employment of structural elements for ornament, a doctrine introduced to this country by Désiré Despradelle, former Rotch Professor of Architecture at the Institute. The Berkeley Building on Boylston Street in Boston was the first in the United States to make use of this revolutionary principle. It is still a good-looking building, though it was erected in 1896.

Functionalism as the designers of Modern furniture use the term, however, means the absence of all ornament, not only applied ornamentation but the structural sort which might be attained by curved edges. Hence the Modern product is of the square box type, with right angles and unrelieved surfaces which soon become monotonous and dreary. That monotony is the chief reason, I think, why Modern design has not been more quickly accepted among decorators who work in the higher price brackets and householders who employ them. Another reason, which I hesitate to mention, may be that these decorators lack the imagination necessary to grasp the principles of the new style and the creative ability required to produce anything different from the furniture of past periods.

Though the new style is on its way, it still has a considerable distance to go before it will be entitled to a name, least of all the name "American." Modern still lacks grace, for the case pieces cling to right angles. It still lacks delicacy, for its proportions are not well

enough studied. It still lacks charm, for the monotony induced by absence of ornament palls on the purchaser. All these things may easily be overcome. Grace in furniture may be gained by refinement of line. Delicacy may be derived by a readjustment of mass. Charm may be achieved by subtle embellishment which proceeds from the designer's imagination. In fact the whole future of Modern design and the position of that style in the procession of the periods through history depend on the designer's ability to translate his whims of fancy into terms of wood.

This material has not yet been put to its full use. The Modern style can demand an entirely new method of laying veneers. They can be so placed on the core as to produce such effects as an asymmetrical balance with crotch or swirl veneers, impossible by the traditional method. In solid wood we have not exhausted the variety possible by different methods of sawing, nor have we made use of all the practical woods available. The war may help along this progress. In the last two or three years, for instance, southern manufacturers have made use of hackberry, a tree which grows only above a certain altitude in the southern mountains. It has a grain something like oak, costs little, and makes satisfactory furniture.

I seem to be limiting the material of which furniture will be made to the substance that has been used for hundreds of years. Of course, furniture has been fabricated of both metal and plastics, and these materials may conceivably be used to a still greater extent. The field of plastics is so new that prophecies are foolish and conjectures vain. Metal, because of its cold sternness, lacks the aesthetic element demanded. Just now, wartime restrictions proscribe the use of either. The plastics thus far experimented with are transparent resins for entire pieces and a little casein for drawer pulls. A plastic veneer which by a photographic process is made to reproduce on its surface the grain of wood or the texture of leather or fabric, has been tried, but it has an inherent fault: The impression of an imitation clings to it. The greatest handicap to the use of plastics has been the excessive cost of molds. Possibly invention, spurred by war, will produce something in plastics entirely feasible for furniture by a process about which we do not yet know.

(Concluded on page 294)

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### FURNITURE IN TRANSITION

(Concluded from page 293)

The war is bound to develop the utilitarian side of furniture rather than the aesthetic. Neither designers nor manufacturers know how greatly the industry will be affected by military demands. Until manufacturers are certain that the markets from which retailers do most of their buying will be curtailed, the present tenor will not be greatly disturbed. The number of new models offered will certainly be reduced, and this fact alone ought to spur the ingenuity of designers to carry forward the Modern style a little closer to the point where it is worthy of a name.

### THE TREND OF AFFAIRS

(Concluded from page 262)

light than do its glass predecessors, and hence is much smaller. The bulb is filled with the customary flash-producing metal foil; oxygen under pressure is injected into it to cause greater intensity when the flash is desired. Automobile tires made of four wooden segments to be bolted to the wheel have been tried out by their inventor. They are made of five plies of chemically treated wood, and are reported to cost about \$10 each — less under mass production.

### THE INSTITUTE GAZETTE

(Concluded from page 279)

proached from a hobby point of view. Reginald E. Gillmor called particular attention to the difficulties of development work in the electronics field. He stated that he felt that in this work only those students having marked aptitude in mathematics and physics and coming in the very upper end of the scholarship grade-distribution curve had a real chance for long-term success, whereas in the power field, because of its relative technical maturity and because the present problems are more of application and management, students coming in the central part of the curve had reasonable assurance of success. The Committee agreed with these comments.

A discussion arose as to the methods made available to the students to show them the possibilities of employment in the various branches of the electrical field. The Committee came to the conclusion that more publicity in the second, and at least not later than the third, year should be arranged so that the students could be better guided in their studies. The Committee felt that more inspirational methods of instruction should be attempted in the courses in the power field. They also felt that more emphasis on the economic and management aspects of the electric power field would be advantageous. Another suggestion was that a subject built on the broad philosophy of design, emphasizing the methods of approach to any new apparatus or equipment problem, might be helpful.

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***AN AID TO ALUMNI IN FINDING DESIRABLE POSITIONS***

# TECHNOLOGY MEN IN ACTION

## THE ALUMNI FUND—ITS PROBLEMS AND GROWTH

*From the Bylaws of the Alumni Association of the Massachusetts Institute of Technology:*

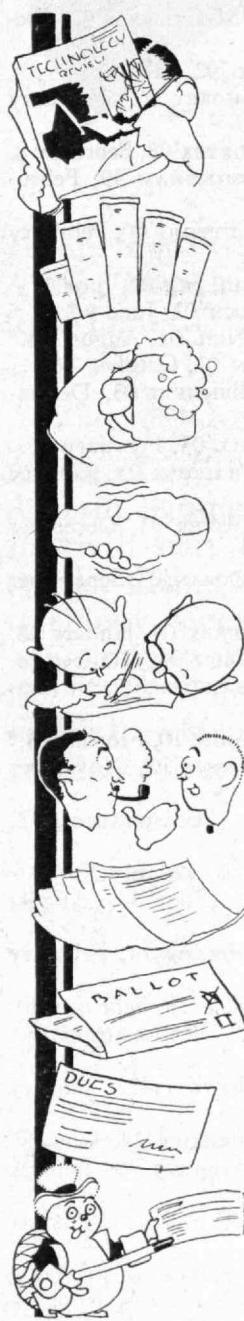
Article VI, Section 6: ". . . It shall be understood and communicated to each donor that an amount of his gift—which amount shall be determined each year by the Executive Committee of the Alumni Association—shall be available for paying the expenses of the Alumni Association and shall include the donor's membership dues in the Association. . . . The latter [M.I.T.] shall pay each year to the Alumni Association . . . the amount needed to cover the operating expenses of the Alumni Association for that year . . . including . . . expenses in connection with the solicitation and collection of the Alumni Fund. . . ."

Article VII, Section 1: "The annual dues, including subscription to The Technology Review, shall be . . . \$3.00 for all types of members of the Association, other than Honorary and Life Members."

"Any member who in any year has made a contribution to the Alumni Fund of \$3.00 or more shall thereby have paid his dues to the Alumni Association for that year."

Annually until 1940, Alumni had been asked to pay dues to the Alumni Association. These dues brought to the individuals The Review and financed the operation of the Association. With the establishment of the Alumni Fund, this procedure was changed. The Fund then became the "only solicitation of funds among the Alumni conducted by the Alumni Association." The financing of The Review, of the Association, and of the Fund itself then became deductible from contributions, as detailed in the bylaws.

What do these deductions cover? Just what are the "expenses of the Alumni Association?" And how have these items changed since the Fund came into being? Here is the answer: B.F. — Before Fund; and A.F. — After Fund.



1. THE TECHNOLOGY REVIEW. The Review is a magazine unique among alumni publications, reflecting both the professional and personal interests of M.I.T. men everywhere. This periodical is constantly quoted in national publications, has the greatest lineage in the reporting of class activities of any alumni magazine in the country, and contains up-to-date information on Institute affairs.
2. FORMER-STUDENT FILES. With the Institute, the Association maintains current address files of all former students. This information is available (with certain limitations) to all Alumni.
3. ALUMNI DAY. The Association promotes the annual Alumni Day. (For detailed information on this year's Alumni Day see page III.)
4. TECHNOLOGY CLUBS. The Association co-operates with, and assists in, promoting the activities of over 70 Technology Clubs throughout the world.
5. ALUMNI COUNCIL. The Council, a body of almost 200 Alumni, meets monthly during the academic year to study and advise on problems of the Institute and Alumni. Some current studies are Alumni Education, Athletic Activities, and Instruction v. Research.
6. ADVISORY COUNCILS. Student activities receive encouragement and guidance from a number of Alumni Advisory Councils.
7. PLACEMENT. The Association co-operates with the Placement Bureau of the Institute whose function is to find more and better jobs for Technology men.
8. INSTITUTE ADMINISTRATION. Through its President, who is a member of the Institute's Administrative Council, and through the fifteen term members whom Alumni elect to the Corporation, the Association participates in the work and regulation of the Institute itself.
9. DUES SOLICITATION. The Association each year conducts a solicitation of dues among the Alumni with which to finance the foregoing activities. Approximately \$5.00.
10. FUND SOLICITATION. The Association each year conducts a solicitation of funds among the Alumni for the benefit of the Institute. From these funds deductions are made to finance Association activities for the mutual benefit of the Alumni, the Institute Administration, and the undergraduate body. Approximately \$5.00.

B.F.	A.F.
✓	✓
✓	✓
✓	✓
✓	✓
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✓	✓
✓	✓
✓	✓
✓	✓

# ALUMNI AND OFFICERS IN THE NEWS

## *Freedom Rings Stronger*

Because RUSSELL WILLSON '05, superintendent of the United States Naval Academy, has been ordered to duty as chief of staff to the commander-in-chief of the United States fleet.

Because EMORY S. LAND '07 has been appointed to head the War Shipping Administration along with his post as chairman of the United States Maritime Commission.

Because JOHN W. NICKERSON '09 heads the industry section of the labor relations branch of the War Production Board and ALBERT J. BROWNING '22 is deputy director of procurement. ROBERT M. KEENEY '09 is the new assistant chief of the nickel branch, materials division.

Because JOHN W. BARRIGER, 3d, '21 is associate director, division of railway transport, Office of Defense Transportation.

Because DANIEL C. SAYRE '23 will head the new department of aeronautical engineering at Princeton University to study aviation problems and train aeronautical engineers to meet the urgent national need.

Because ANTHONY L. DANIS '28, while commanding officer of the United States destroyer Kearny brought his submarine-attacked ship safely to port and for his heroism was awarded the Navy Cross.

Because ROBERT J. ESSLINGER '40, engineering officer of the Kearny, kept the engineering plant in operation with no thought of personal safety during the ship's torpedoing and was honored with the Navy Cross.

## *Add Techniciana*

BURT R. RICKARDS '99 was awarded a 40-year membership in the American Public Health Association.

RUFUS E. ZIMMERMAN '11 has been re-elected president of the American Standards Association, and HAROLD S. OSBORNE '08 is the new chairman of the Standards Council.

GEORGE J. HARRINGTON '24 was made president of the Massachusetts Leather Manufacturers' Association.

HALL L. HIBBARD '28 became the tenth president of the Institute of the Aeronautical Sciences.

HORACE R. BYERS '32 received the Robert M. Losey Award for 1941 for

his research in air-mass analysis and its applications in synoptic and aeronautical meteorology. First presented in 1940, the award was received by HENRY G. HOUGHTON, JR., '27. Certificates of fellowship in the institute were presented to WARREN W. WEBSTER '16, JOHN W. CROWLEY, JR., '20, FREDERICK W. PENNOYER, JR., '20, HARRY A. SUTTON '26, and GEORGE W. BRADY '27.

## *Written Words*

By THOMAS D. PERRY '00, *Modern Plywood*, Pitman.

By KARL R. KENNISON '08, "The Hydraulics of the New Pressure Aqueduct of the Metropolitan Water District," *Journal of the Boston Society of Civil Engineers*, January.

By RUDOLPH B. WEILER '08, "Philatelic History of the Canal Zone," *Stamps*, January 8.

By THOMAS C. DESMOND '09, "Women at Work: Cleaning up the Roadside," the *Bulletin* of the National Council of State Garden Clubs, Inc., November; "Blighted Areas Get a New Chance," *National Municipal Review*, November; "The Tax on Taxes," *Barron's*, December 8; "One in Six Is Infected with Deadly Pork Parasite," *Life and Health*, January; "Our Meat — Let's Keep It Clean," *Pic*, January 20.

By TENNEY L. DAVIS '13, *The Chemistry of Powder and Explosives*, Wiley.

By JAMES A. TOBEY '15, "Vitamin and Mineral Fortification of White Bread," *Proceedings of Institute of Food Technologists*, 1941.

By FAY S. LINCOLN '22, "Homes by Lincoln," *U. S. Camera*, March.

By HERMON H. SCOTT '30, "An A-C-Operated Power Supply for the Sound-Level Meter" in the *General Radio Experimenter*, January.

By WILLIAM W. CAUDILL '39, "Space for Teaching," Bulletin 59 of the Agricultural and Mechanical College of Texas, August.

By MARTIN J. BUERGER, staff, *X-Ray Crystallography*, Wiley.

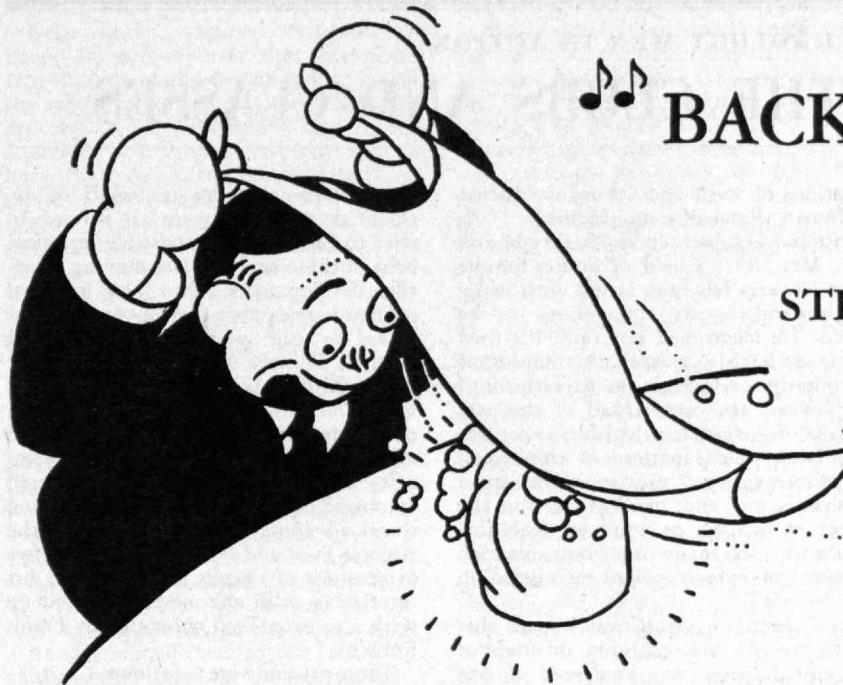
By EARL B. MILLARD, staff, *Physical Chemistry for Colleges*, McGraw-Hill.

By CHARLES W. MACGREGOR, staff, "The Tension Test," *Proceedings of the American Society for Testing Materials*, Volume 40.

## DEATHS

\* Mentioned in class notes.

- ARTHUR E. WILSON '79, February 20.
- GEORGE U. G. HOLMAN '88, February 10.\*
- CHARLES M. WATSON '90, February 20.
- WILLIAM H. PUNCHARD '91, February 14.\*
- GEORGE M. DOWNING '92, November 29.\*
- ALFRED H. McCULLOCH '92, December 10.\*
- FRANK YOERG '92, July 13.
- S. ANNIE SHOREY '96, February 14.\*
- ARTHUR F. PORTER '98, February 8.
- Brooks Frothingham '99, February 15.
- GEORGE W. CUTTING '00, February 4.\*
- JOHN M. HOOD, JR., '01, June.\*
- HARRY G. KOCH '01, June 9.\*
- HECTOR MacNEIL '01, August 24.\*
- A. E. HANSEN '02, October 24.\*
- ARTHUR F. BENNETT '03, December 1.\*
- FRANK A. HILL '03, February 11.
- FREDERIC C. HIRONS '03, January 23.\*
- RALPH H. NUTTER '03, December 26.\*
- FRANK A. SHERMAN '03, September 10.\*
- LLEWELLYN BIXBY '04, January 26.
- WALTER T. KEEN '04, October 18.
- ADOLPH J. ORTSEIFEN '05, November 3.\*
- AUSTIN B. MASON '10, February 5.\*
- RALPH H. DOANE '12, November 6.\*
- WILLIAM G. HAMMERSTROM '12, January 25.\*
- HENRY N. OTIS '12, July 20.\*
- FREDERICK E. POOR '12, August 5.\*
- HERBERT V. BRADY '14, February 7.
- NELSON MACRAE '16, February 10.
- DONALD E. WOODBRIDGE '16\*, January 21.\*
- FRANK A. HOWLETT '22, January 4, 1939.
- CHARLES H. FRAZIER '24, January.
- ROBERT Y. BARBOUR '29, January 29.
- CARLTON P. CHADBOURNE '33, May 17.
- BERNARD S. EDELMAN '40, January 30.



# COME BACK TO TECH

*for the*

## STEIN-ON-THE-TABLE ALUMNI BANQUET

Hotel Statler, Boston  
APRIL 25, 1942

Technology's wartime program has changed the date of Commencement from June 9 to April 27. So that the graduates of 1942 may share in Alumni Day festivities, the date for Alumni Day has been advanced to Saturday, April 25.

### CLASS DAY PROGRAM

Alumni Day 1942 consists of only two events: Class Day, and the "Good-Fellowship" Alumni Banquet. Class Day activities will be held in Morss Hall, Walker Memorial, and will start at 2:15 P.M. Sharing the honors with the Class of 1942 will be the twenty-fifth (1917) and the fiftieth (1892) reunioning classes. At this traditional ceremony, members of the Class of 1942 officially become Alumni.

Following the Class Day program, the sixth Rowe Memorial Regatta, in honor of the late Allan Winter Rowe, '01, will be held on the Charles River Basin, directly in front of Walker Memorial, with the crews of M.I.T., Harvard, Syracuse, and Boston University competing.

### STEIN-ON-THE-TABLE BANQUET

At 7:00 P.M. Technology Alumni will gather at the Hotel Statler for another evening of good-fellowship among good fellows—the yearly opportunity for Alumni to renew old friendships and make new acquaintances among men who compose an ever-strengthening body of Institute Alumni. Graduates of 1942 will be present as guests of the Alumni Association. Dr. Compton will bring his annual message to Alumni on the "state of Technology." The cost of the banquet has been reduced to \$3.50, including both Federal and State taxes. Make checks payable to "Alumni Association of the M.I.T.," and mail to Room 3-219, M.I.T., Cambridge, Mass.

ORDER YOUR TICKET TODAY

# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *M.I.T. Club of Akron*

M.I.T. men in Akron are playing a large part in the activities of a real defense city. Although the result is that many of the group are frequently "away on business," a very enjoyable meeting was held on February 16 at the University Club. After everyone was well acquainted "downstairs," a fine dinner was served. Seated at the head table with Walter O. Teague '02, who presided at the request of President James B. Holden '30, were George A. Morrison '09, the speaker of the evening, and George W. Sherman '94.

An announcement was made concerning President Holden's illness; he has been confined to Lakeside Hospital, Cleveland, following a serious operation. Greetings were sent, and the group hope to have Jimmy back in activity soon. During the business session which followed, a considerable amount of discussion concerned our lack of activity as a group in the civilian defense program. A great deal of individual action was revealed, but group participation does not seem advisable at this time. George Sherman presented interesting information about the local salvage program.

The attraction of the evening proved to be a real attraction. George Morrison, who is engaged as a mining engineer by the Columbia chemical division of the Pittsburgh Plate Glass Company, told of some of his world-wide experiences in mining metals and described the Columbia limestone mine project which is now in construction in Barberton, Ohio. The story of mining one-half mile below the surface with Diesel shovels, large limestone crushers, and skips carrying 10 tons each would always be interesting to engineers; however, a description such as we had from one of our own members made the evening memorable.

Other Alumni present were Walter P. Keith '14, Robert W. Moorhouse '14, Norris E. Kimball '15, William H. Turner '18, George H. Atkinson '21, Lloyd W. Irving '25, Lawrence S. Randall '26, Forrest K. Miller '28, George A. Fowles '34, Warren L. Towle '34, John T. Cox, Jr., '36, Wendell K. Fitch '36, Scott C. Rethorst '36, George R. Mitchell, Jr., '39, and James S. Cullison '41. — WENDELL K. FITCH '36, *Secretary*, 695 Schiller Avenue, Akron, Ohio.

### *Technology Club of Chicago*

At a noonday meeting at the University Club of Chicago, on January 27, we had an especially large attendance to hear Harold F. North, director of industrial

relations of Swift and Company, discuss "Human Relations in Industry." As Swift and Company have 73,000 employees, Mr. North's field of action for the past 30 years has been large, with many angles and knotty unravelings to be faced. He mentioned not only his own company but also several other important corporations which, in their treatment of employees, are years ahead of the past decade of government legislation regarding labor. Such matters as employees' benefits, pensions, vacations with pay, compensation and medical care in the event of sickness or accident, technical education, and many other humanitarian features of industry were mentioned in the lecture.

His opening question was, "Is all this justified?" At the conclusion, no doubt of the justification was evidenced if one were to judge by the enthusiastic applause. An investment of millions of dollars in land, buildings, and machinery, with annual sales at the billion mark, needs insurance and protection. The satisfied and loyal employee is an important asset to the employer. Since many who attended the luncheon were industrialists and had faced similar problems, Mr. North's lucid descriptions received their hearty approval. — NELSON C. WORKS '17, *Secretary*, Paine Webber and Company, 400 Rookery, Chicago, Ill. LONSDALE GREEN '87, *Review Secretary*, 5639 Kenwood Avenue, Chicago, Ill.

### *Technology Club of Central Pennsylvania*

Our midwinter meeting at Harrisburg, Pa., on February 12 drew a banner attendance. Members from a radius of 50 miles gathered at the DeWitt House, 2201 North Front Street, to hear the latest news from Cambridge as related by our genial Alumni Secretary, Charlie Locke '96.

As the occasion was only social, we had ample time to renew acquaintances and to compare notes. We also enjoyed the company of several guests — prospective '46 men and their fathers — invited by our Honorary Secretary, Percy E. Tillson '06. Percy is doing a fine job in the Harrisburg area, both in his conscientious appraisal of future Tech material and in keeping up the old club spirit. Our President, Frank A. Robbins, Jr., '02 was host for our speaker during the afternoon hours previous to our meeting and provided a conducted tour through the Bethlehem Steel Company's plant at Steelton, where Frank is general manager.

After the dinner, called at seven, we all enjoyed hearing Charlie tell us about the latest activities at Technology, and we learned of the intense work that is being done by the Faculty, graduates, and re-

search student groups in behalf of national defense. We were all invited to refer to Cambridge for possible technical help in these times of fast-moving scientific developments. Two new reels of colored movies were then shown and discussed by the speaker, who borrowed from Ed Weimer '98 a cane to point out the highlights both in the recent aerial views showing Tech as it is today and in the many intimate views of social and athletic activities now available. Memories of student days were stimulated among us all as we noted the athletic and social advantages of today, such as the Alumni Pool and the dinghy fleet. After expressions of thanks to Charlie for his interesting talk, the meeting wound up with a rousing Tech cheer, led by Frank Robbins.

Those present were as follows: *Guests* — C. S. Breese, Kansas State '12, and son Robert K. Breese; G. Warmflash and son Henry; L. A. Boblitt, Harvard '07, and M. Rubin; *Members* — Edgar A. Weimer, Frank A. Robbins, Jr., Clark A. Bryan '03, Percy E. Tillson, Carl W. Gram '09, Harold R. Perry '10, Clifford J. Walton '14, Gardiner C. Wilson '15, John M. Nalle '20, Eldor J. Mink '22, Breese J. Stevens '23, John R. Konold '24, Francis A. J. Brown '26, Andrew R. Brugnoni '26, John P. Connelly '28, Wesley H. Van-Buren '32, Wendell C. Allen '33, and James E. Hazeltine, Jr., '40. — GARDINER C. WILSON '15, *Secretary*, Armstrong Cork Company, Engineering Department, Lancaster, Pa.

### *M.I.T. Club of Northern New Jersey*

A meeting of the officers and members of the executive and advisory committees of the Club was held February 4 at the Newark Athletic Club. The following men were present: George M. Warner '91, Gordon G. Holbrook '10, Harold H. Brackett '12, Kebe Toabe '15, Maxwell K. Burckett '21, James A. Bowers '22, William J. Grady '22, August P. Munning '22, Everett W. Vilett '22, Channing P. Clapp '23, Miles Pennybacker '23, Lyman L. Tremaine '23, Edwin E. Kussmaul '25, Newton S. Foster '28, Warren H. Dolben '30, and Walter L. Wise, Jr., '34. Final plans for the April banquet were announced by Dolben, chairman, as follows: the date, Thursday, April 16; the time, 6:30 p.m.; the place, Newark Athletic Club; the toastmaster, F. Alexander Magoun '18, Associate Professor of Humanics, M.I.T. The speakers will be Chester Ballard, President of the New Jersey Bell Telephone Company, and Horace S. Ford, Treasurer of M.I.T. Mr. Ballard will speak on a subject of his own choice. Mr. Ford will show some of the latest pictures taken around the Institute

and will describe some of the present activities there.

Kebe Toabe, regional chairman of Union County, reported that 45 couples were present at the dinner dance held at the Suburban Golf Club, Union, N.J. The proceeds of \$40 were turned over to the American Red Cross. — All were glad to hear that A. Raymond Brooks'17 is rapidly recovering from a recent hospitalization. — NEWTON S. FOSTER '28, *Secretary*, 73 Daniel Avenue, Rutherford, N.J. *Assistant Secretaries*: ROBERT F. WAY '33 and WALTER L. WISE, JR., '34, Colgate-Palmolive-Peet Company, 105 Hudson Street, Jersey City, N.J.

### Technology Club of Philadelphia

Sixty-five members of the Club met at Kugler's Restaurant on February 11. Charles E. Locke '96, Alumni Secretary, was guest speaker of the evening and delivered a most entertaining talk on activities at the Institute. By means of pictures and charts, he outlined the growth of M.I.T. from 1916, when the present location was established, to the present date.

At this annual meeting the following officers were elected for the coming year: President, Philip M. Alden '22; First Vice-president, Edward J. Healy '23; Second Vice-president, Henry F. Daley '15; Third Vice-president, Harry L. Bowman '14; Secretary, George T. Logan '29; and Treasurer, Granger D. Schrader '30. — GEORGE T. LOGAN '29, *Secretary*, 1000 Chestnut Street, Philadelphia, Pa. HENRY F. DALEY '15, *Review Secretary*, B. F. Sturtevant Company, Cresmont and Haddon Avenues, Camden, N.J.

### Technology Club of Rochester

On February 2, Per K. Frolich '23 was our guest at a luncheon held at the University Club of Rochester. Dr. Frolich, President-elect of the American Chemical Society and director of the chemical laboratories of the Standard Oil Development Company of New Jersey, mentioned some familiar names of Technology men working at this company. His interesting talk concerned the production of organic chemicals and synthetic rubber by the petroleum industry.

Those present were Frank W. Lovejoy '94, Henry H. Tozier '96, Paul B. Wesson '98, Virgil M. Palmer '03, M. Herbert Eisenhart '07, Lynn A. Loomis '08, Harold O. Stewart '09, J. Howard Cather '12, Philip S. Barnes '13, William R. McEwen '15, Edward S. Farrow '20, Earold C. Jewett '22, Harold H. Leary '23, Raymond H. Lambert '24, Cyril J. Staud '24, Gordon L. Calderwood '27, Lee McCanne '27, Howard S. Gardner '30, Ralph W. Peters '30, Stanley C. Wells '30, O. Glenn Goodhand '31, Winfield Partridge, Jr., '33, Robert E. Smith '33, Walter F. Swanton '33, Geoffrey Broughton '36, Virgil M. Palmer, Jr., '36, Robert S. Reichart '37, George A. Akin '38, and Thomas Hooker '40.

The Club is pleased to announce the names of the following new members: Charles J. Roggi '29, George Akin, Rob-

ert E. Holdman '41, Helen B. Park '41, and George E. Yeomans '41.

The Secretary plans to leave for army service before the next issue, so our Vice-president has offered to take over writing for The Review. Any information you would like to pass along about yourselves or the doings of classmates will be very welcome to Ralph W. Peters '30, Building 50, Kodak Park, Rochester, N.Y. — WINFIELD PARTRIDGE, JR., '33, *Retiring Secretary*, 76 Magee Avenue, Rochester, N.Y.

### Washington Society of the M.I.T.

Covering the meeting on January 23 at the Y.W.C.A. at 5:30 p.m., Robert K. Thulman '22, reporting for the Review Secretary, notes that "President Paul F. Douglas of American University spoke before the Society on Engineering Thinking in Wartime."

"President Douglas deplored the present tendency of colleges to relax their requirements and to shorten courses during the war period, and expressed gratification that the Institute had not seen fit to follow this practice. He expressed the opinion that the engineer should be more concerned with social science and politics. It was his belief that the reason the engineer did not do so was reluctance to concern himself with anything but engineering. In all too many instances in our modern social structure, the end is described by politicians. A tragedy of technical education is the fact that it is concerned more with the means toward the end rather than the end in itself.

"Engineering thinking should have greater interest in four objectives: freedom of the individual, usefulness of the state, sacredness of life, and justice of the economic system. In the discussion following, the question was raised as to why the engineer was impotent to do more about the ends rather than about the means. One opinion was that the average engineer is not a politician and is also too busy."

The following M.I.T. men and guest enjoyed the talk and the ensuing meal: C. Leonard Brown '88, Sanford E. Thompson '88, John G. Crane '90, Percy H. Thomas '93, Proctor L. Dougherty '97, Frederick A. Hunnewell '97, Francis K. Baxter '01, W. Lorrain Cook '03, Merton L. Emerson '04, Amasa M. Holcombe '04, Frank W. Milliken '04, George H. Shaw '04, George N. Wheat '04, Holman I. Pearl '10, David P. Allen '11, Elisha N. Fales '11, Carl G. Richmond '11, David J. Guy '12, Horace M. Baxter '17, Hamat D. Manuelian '18, Louis J. Grayson '19, James G. Strobridge '19, Wendell P. Sammet '20, George R. Hopkins '22, George D. Fife '24, Harry B. Swett '25, Samuel J. Cole '26, Morris L. Minsk '26, Albert E. Beitzell '28, M. Waldo Keyes '28, George D. Mock '28, Ernest Kohler, Jr., '29, Albert F. Bird '30, Mario V. Caputo '31, Freeman G. Corkum '31, Henry D. Randall, Jr., '31, Roger J. Zampell '32, C. Wallace Bohrer '33, George E. Wuestefeld '34, Marshall M. Holcombe '36, Robert E. Williams, Jr.,

'36, George B. Hunter, Jr., '37, Andrew L. Fabens, Jr., '39, Robert J. Saunders '39, Woodson W. Baldwin '39, William G. Osmun '40, Robert S. Harper '40, Thomas F. Jones, Jr., '40, and H. S. Walker, Dartmouth '17. — AMASA M. HOLCOMBE '04, *Secretary*, 428 Munsey Building, Washington, D.C. WILLIAM K. MACMAHON '22, *Review Secretary*, Rosslyn Gas Company, 3240 Wilson Boulevard, Arlington, Va.

### Worcester County Alumni Association of M.I.T.

The rubber shortage was the subject of an address by Ernst A. Hauser, Associate Professor of Chemical Engineering at M.I.T., before the midwinter dinner meeting of the Association, February 12, at the Hotel Bancroft. Dr. Hauser favors the development of natural rubber in America from the guayule shrub and "predicted that prompt and intelligent action would make this country entirely self-sufficient in rubber in eight or nine years," according to a report of the meeting printed in the Worcester *Telegram*.

Ralph T. Jope '28 assured Alumni that the accelerated educational system had not caused the cessation of any sport at the Institute and announced that the speeded-up program will place Alumni Day on April 25, ended by the customary banquet at the Hotel Statler.

Orville B. Denison '11 presided at the meeting, which was attended by the following men: Carleton A. Read '91, Harry M. Latham '93, Louis E. Vaughan '02, Fremont N. Turgeon '04, Charles E. Allen '07, Percy J. Colvin '07, Fred H. Daniels '11, Harold L. Robinson '11, Frank S. Hunt '16, Ernest P. Whitehead '20, Robert N. C. Hessel '27, Robert J. Proctor '28, Frederick E. Mader '32, W. Franklin Baxter, Jr., '34, Arthur J. Lariviere '35, Charles M. Dierksmier '37, John M. Gould '37, and J. J. Osborn. — ARTHUR J. LARIVIERE '35, *Secretary*, 7 Woodbine Street, Worcester, Mass.

## CLASS NOTES

### 1888

George Roper of Norfolk, Va., our champion mile-runner in the early Eighties, has written your Secretary a letter which ought to be printed verbatim in these notes, but the last line reads, "This is not for publication," so I'll have to be content with one sentence: "We need more industrial organization, more ships, planes, and armament rather than an extension in bureaus, red tape, and typewriters." George ought to join Sanford Thompson in Washington. He can push navy production as Sanford is pushing the army output. George has trebled the capacity of his present plant and is starting to build a much larger yard. Thus, judging from the letters I have received from Ned Webster and others, '88 is trying to do its share of war work.

Henry Bates reports that though the brace has been taken off his broken leg, it is still pretty weak. His son-in-law,

1888 *Continued*

James A. Patch '00, has a "defense garden," in which he raises digitalis, sage, and a little belladonna. Henry helps him, so '88 can claim some of the credit, although the major share goes to '00.

It is my sad duty to record the passing of another member of the Class, George Ulysses Grant Holman, who died in Hartford, Conn., on February 10. His trouble was diagnosed as acute anemia. As an undergraduate he took more interest in outside activities than did perhaps any other member of the Class. He was secretary of the Society of '88 for several years. After graduation he was in succession with the Thomson-Houston Electric Company at Lynn, Mass., St. Paul and Duluth, Minn.; the Mather Electric Company, Manchester, Conn.; the Vulcan Steam Boiler Works, New York City; the Brooklyn City Railroad; the Oak Lane Gas Company, Philadelphia, Pa.; the Richmond-Petersburg and Carolina Railroad; the General Electric Company, Schenectady, N.Y.; the Canadian Electric Light Company and the Levis County Railway, Quebec, Canada; and the Johns-Manville Corporation, Boston, Mass. He held all of these positions previous to 1908.

From 1908 to 1914 Holman was engaged in promoting an electric railway between Altoona and Johnstown, Pa. From 1915 on, he was state representative for Connecticut of the Alexander Hamilton Institute of New York, located at Hartford. He was a member of the Franklin Institute of Pennsylvania, the University Club of Hartford, and the Mayflower Descendants Society of Massachusetts. Holman was buried in Woodlawn Cemetery, Everett, Mass., on February 12. President Webster represented the Class at the simple service at the grave. Flowers were sent by the Class. Holman had a very active life and was a regular attendant at all the class reunions and dinners. We shall miss him.

Deacon Smith writes from his home in North Hampton, N.H.: "I was 76 on January 28, and celebrated the occasion by cutting down a few trees towards my year's supply of firewood. My health is better than it was 55 years ago. I have been confined to the house only three days in the last 64 years, so I cannot complain." There's a typical '88 man. — Bowditch, a member of the board of Massachusetts State College for more than 45 years, was re-elected vice-president in January. — BERTRAND R. T. COLLINS, *Secretary*, 39 Wiggins Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., 620 Newbury Street, Boston, Mass.

## 1889

Unfortunately the Secretary is short of news this month, but the lack will save wood pulp anyway. We have one new address to report — that of Julian Millard, who is now at 3008 North 3d Street, Harrisburg, Pa. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

## 1891

We regret to report the death of William H. Punchard on Saturday, February 14, at his home in Newton, Mass. Services were held in Lowell, Mass., and the burial was at Woodlawn Cemetery. His wife is still living, and he had one daughter and two grandchildren. For many years he was a landscape architect and at one time worked on land use and water pollution for the Massachusetts State Planning Board. He was a regular attendant at our reunions and dinners and was with us at our fiftieth. He had expected to come to our class dinner in January but could not make it. He always seemed to enjoy our parties, and his presence added to our pleasure. Business conditions practically ended his work as a landscape architect, but he never complained. We shall miss him.

A class dinner was held on Friday, January 23, at the Algonquin Club, Boston. The 14 present were Bradlee, Brown, Colburn, Cole, Damon, Dana, Dart, Fiske, Forbes, Holmes, Howard, Ryder, Wilder, and Young. Barnes expected to come but was unable to make it. Replies were received from 38 others, many of whom sent greetings and expressed their appreciation and approval of the class book. The only complaint was of Steve Bowen's picture which, the critics say, "is far from doing justice to such a handsome man."

Reply cards from Garrison, Hersam, Kimball, and Leland on the Pacific Coast show their continued interest. I received a telegram from Steve Bowen in Winter Park, Fla., with greetings from Blanchard and Walker, who are all there together at this time. A letter from Steve said that the telegraph girl nearly passed out. "Just think of it, the Class of 1891," she said. She must have thought we were 100 years old. Fred Blanchard is getting better all the time and likes the place very much (as who wouldn't). Cards came also from Douglass in Daytona Beach, Fla., Hanington in Denver, Colo., and others not so far away. To have Billy Dart with us was an especial pleasure, as he could not come to our fiftieth. Colburn, who also could not come to the fiftieth, attended this get-together. The dinner was highly satisfactory, for nothing is better than the Algonquin Club, with Harry Young as our host.

The Secretary reported that contributions to the reunion and to the class book exceeded the expenses and that all bills have been paid, with proper vouchers on file. A small balance remains, sufficient for our present needs. — The Secretary and Dana read some letters acknowledging receipt of, and thanking us for, copies of the class book. The names included Karl T. Compton, Horace S. Ford, Harry E. Clifford '86, Mrs. Charles W. Aiken, Mrs. George K. Hooper, Mrs. F. Campbell Moore, Mrs. Clarence E. Whitney, Harry J. Carlson '92, Charles E. Locke '96, James P. Sprague '00, and John D. Mitsch '20. — Later in the evening Dana and Howard showed us some colored movies of our fiftieth, and the likenesses were very

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good. Then Frank Howard showed us some unusually interesting colored movies and stills taken on a recent trip to Haiti. He took a boat all along the coast line, loading bananas from small boats. The pictures were excellent in color, and the subjects differed from those the tourist sees of Haiti. Especially interesting were some stills of Christophe's castle at Cap-Haitien.

Less than 100 are left on our active list, and in the future we expect to send out notices of dinners or meetings to everyone on the list, so that all will know of our doings. We hope that those who cannot come will send us greetings. Although our numbers are diminishing, our enthusiasm and pleasure at getting together remain undimmed. — We recently heard from Harmon Wendell, who now lives in North Hollywood, Calif. For a long time we had not heard from him in any way, but he still remembers M.I.T., as is shown by his letter, part of which is as follows: "Although 54 years have passed, I still have vivid recollections of my one term at the old M.I.T. on Boylston Street. Especially well do I remember the handsome, coldly dignified math Professor, Webster Wells [73], author of the textbook we used. One day, before the math class, I asked him to tell me how to solve the apparently simple algebra problem of  $x+y^2=11$  and  $x^2+y=7$ . I thought I had him stumped, but he turned a cold eye on me and said it could be solved only by a 'process of approximation.' I didn't pursue the subject; 19-year-old youngsters didn't argue with Webby."

Billy Greer replied to our notice of the class dinner. We lost track of him for some years, but now that we have found him again and he plans to come East, we hope he will look us up. He writes from San Francisco, Calif.: "I expect to be in New York City soon and would find it a joy to be with you on the date indicated. You may be sure I will be with you this evening, as you have your party. May long life and radiant health be the lot of every one of the old bunch of '91. May God bless you all." — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I.

## 1892

Responses to the circular letter are coming in promptly from a large number of our members. These answers contain much material of interest to '92 men.

BARRON P. DU BOIS was a captain in the United States Navy, Supply Corps. He was a member of the landing party that hoisted the flag on Wake Island and was the first naval officer to reside officially in Guam, where he took over the administration of the treasury from the Spanish treasurer.

CARLETON E. DAVIS is vice-president and manager of the Philadelphia Suburban Water Company, which supplies 49 municipalities and a population of 375,000. He has been engineer of water works and sewers of the Isthmian Canal Commission, Panama; department engineer of the board of water supply, New York; chief of the bureau of water, Philadel-

1892 *Continued*

phia; manager of the Indianapolis Water Company; as well as president of the New England Water Works Association and of the American Water Works Association.

Sumner B. Ely has been chief engineer of the American Sheet Steel Company of Pittsburgh, where he redesigned and consolidated 25 plants. When this company was absorbed by the American Sheet and Tin Plate Company, he became its chief engineer. Later he became vice-president of the Albree Iron Works Company, which he organized for the manufacture of light structural ironwork and pneumatic compression riveters. Upon the death of Mr. Albree, Ely disposed of interests in the company and became a member of the faculty of the Carnegie Institute of Technology, advancing from assistant professor of commercial engineering to associate professor of power engineering and of mechanical engineering. In 1939, he became professor emeritus.

Edward W. T. Gray, now retired, has four children and four grandchildren. — Herbert G. Fairfield has five children and seven grandchildren, one of whom is working. — Edward C. Hall is a representative in the Massachusetts State Legislature. — John W. Hall gives his major accomplishment, "Secretary of the Class from 1920-1941." I think this must be humorous, for I find in his sheet many outstanding activities.

Wesley Halliburton writes from Memphis, Tenn., that "distance, rubber, high rail fares, blue devils (yellow ones, too), and old age are some of the reasons why I have put out of my mind any prospects of being present at the various interesting events. Indeed, nothing I know of would be more pleasing. . . . I have always played a lone hand, was never in the war, but am a 'Kentucky Colonel' nevertheless, and this means I know what a good Kentuckian should know."

George H. Ingraham says he is "practically retired. . . . I have built a house for myself in Marblehead and am now living in that town for my old age." He has had four children and now has seven grandchildren. — William W. Locke is retired. He says, "I have been blessed with a long life and almost continuous good health." We can understand his statement, "I have spent my whole life trying to brighten the corner where I resided." — George H. May retired from business in 1910. He was secretary and treasurer of Fabrikoid Company of Newburgh, N.Y., a company that was bought by E. I. duPont de Nemours and Company, Inc., in 1910. — William H. Messenger retired in 1937 after having spent 41 years building highways in Brooklyn, N.Y. He served as assistant engineer in the United States Navy in the Spanish-American War and was a captain with the United States Engineers during the World War, spending 18 months overseas. — John G. Morse is a retired appraiser with the Associate Factory Mutual Fire Insurance Company. — We were glad to hear from Laurence B. Manley, now retired, who

writes, "My principal accomplishment has been the raising of a very fine family of children." He has six children and six grandchildren. — Herbert R. Moody has been a professor of chemistry at Hobart College and professor of chemistry and chemical engineering and director of the department of chemistry of the College of the City of New York. He is now professor emeritus. Although he has spent all his life teaching, he holds several patents for chemical processes. After pursuing graduate study, he received the degrees of A.M. and Ph.D. He says: "Life has given me largely of what we call success. First and foremost looms my fortunate married life of almost 47 years with Edna Wadsworth '93. I have always had all one needs to live comfortably, even luxuriously. We are now able to live where we choose. We have a very long season in Maine; we have our 'home' in Virginia, where we spend a long spring and a good part of the autumn. Winters we spend in Florida. I have lived the full life and am still going strong."

LeRoy K. Sherman is a consulting engineer. He has been consultant on flood control, Corps of Engineers; president of Randolph-Perkins Company, Chicago; and director of United States Industrial Housing and Transportation. — James H. Slade says he will be with the Class this month. He is assistant to the manager of the Index Bureau, Inc., of Boston and has been chairman of the Quincy park commission and a member of the Quincy planning board. — Robert R. Taylor is now a retired architect, after a successful career and activity in many fields that gave him prominence. He was architect for the Tuskegee State Normal and Industrial Institute, Tuskegee, Ala., and became director of mechanical industries and vice-principal. By invitation from the Republic of Liberia he went to Liberia, selected a tract of land, and designed the buildings for their agricultural and mechanical college. He was one of the speakers on the fiftieth anniversary program of the founding of M.I.T. and has been commencement speaker for various schools and colleges.

Augustus F. Knudsen writes from Los Angeles that he enjoys all the communications from M.I.T. and that he is as sure to be at the Institute this month as any man. Knudsen's questionnaire sheet is most interesting. It should be recalled that he was born in the Kingdom of Hawaii under King Kamehameha V. "I carried a gun all through the dethronement of Queen Liliuokalani," he says, "and worked for the annexation of Hawaii to the United States as a territory. Since then (1898) I have been an American citizen." Knudsen took on the management of the Hawaiian exhibit at Alaska, Pacific Exposition, and was chairman of both the Federal and territorial committees. His hobbies are anthropology and psychology. He has traveled extensively in America, Europe, China, India, and the East Indies, and has been around the world eight times. He has investigated the leading religions of these countries. "In so doing," he

continues, "I have studied the languages, customs, and beliefs of these peoples. I have personally talked with the Bushmen and Pygmy remnants of the Philippines, southern India, Java, and southern China. We human beings are a varied race. I like all that I have seen of mankind and, knowing them and evolution, I insist that man is so far above the animal that there are at least three missing links. I caught a fierce type of malaria in the mountains of French Indo-China in January, 1940, and came back to the United States in May, 1940. I am well enough to be fit — that is, for a man of my age."

A reply from Dr. Douglass A. Cater, from whom we have not heard for many years, is most gratifying. — I regret that I have to announce the deaths of George M. Downing on November 29, and of Alfred H. McCulloch on December 10. — CHARLES F. PARK, *Secretary*, Room 5-111, M.I.T., Cambridge, Mass.

#### 1895

Amidst "Red Crossing," "first aiding," and "defensing," your Secretary feels as though he were having a joy ride on a merry-go-round and presumes all the rest of you are not far behind. If you see no news items in this column under 1895, is the lack not your own fault? Please send some information which will help to push the Secretary's pen into a longer report for the next month.

Francis E. Faxon was located in Wappingers Falls, N.Y., for many years. Several years ago his health prevented active participation in business. You will now find him at 117 West 58th Street, New York, N.Y., Arthur D. Dean has left Warner, N.H., and his present address is Box 502, New Milford, Conn. Charles W. Berry has changed his mailing address from M.I.T. to 42 Water Street, Medford, Mass. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

#### 1896

Your Secretary attended the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York City and while there participated in another annual gathering of classmates. The dinner this year was held in the President Tavern, which proved to be a most satisfactory place. Arrangements were made by Admiral Bakenhus, with the co-operation of John Tilley and L. K. Sager. Very fortunately John Rockwell decided that he ought to have a little respite from his medical duties, and he and Mrs. Rockwell made a week-end trip to Montclair, N.J. Thus our Assistant Secretary was in attendance at the dinner on February 10.

Present were Bakenhus, G. Hall, Meluish, Rutherford, Sager, Stevens, Tilley, and Trout. It was a pleasure to see Stevens again as, to the best of the Secretary's recollection, he had not seen Stevens since our anniversary celebration at Squam Lake. Father Partridge was unable to attend the gathering because he felt that his state of health made him not quite equal to it. Ruckgaber was kept away

1896 *Continued*

because he was just recovering from the effects of a bad cold. Dorrance had an important meeting in New Haven that same night, which prevented his attendance. Fred Andrew was so wrapped up in business that he was unable to take time off. He is engaged in war work as product engineer in a plant that makes antiaircraft guns. Freedman was another man who was up to his ears in work and felt that he could not take an evening off.

The evening, without any formal program but with exchange of information and general social enjoyment, passed all too quickly, coming to an end at 11:00 p.m. Seeing some of the results of a new process for producing baked molded forms out of common clay was particularly interesting. To do this Rutherford makes use of a special binder which requires that the clay be baked at a relatively low temperature instead of being fired at the high temperature customarily used for making brick. The product is very hard and at the same time rather tough, so that it does not break easily.

After the New York gathering, your Secretary was in Philadelphia on February 11, as a guest speaker at a dinner meeting of the Technology Club of Philadelphia. To find Dan Bates present at that meeting was a happy surprise. Dan is another busy man these days and had been afraid that he would be unable to be in Philadelphia that night. He and the Secretary had a social hour at the Racquet Club after the meeting was over. The following morning found them breakfasting together in the clubhouse. It was fine to see Dan again — just the same old happy, busy self.

From Philadelphia the Secretary went to Harrisburg to a dinner meeting of the Technology Club of Central Pennsylvania on February 12. Lou Morse was expected to be in attendance at this meeting, and the Secretary was disappointed not to see his face. Inquiry developed that Lou had been seriously ill with what was reported to be pneumonia but fortunately was convalescing satisfactorily. — In accordance with the vote of the Class, a contribution of \$50 has been made for assistance to young Edwin Palmer for the year 1942.

Announcement has reached the Secretary of the marriage of Mark Allen's son Richard to Mary A. Crain on January 7 in Detroit. Mark himself has sent the Secretary a very interesting brochure describing the new Horace H. Rackham Educational Memorial Building in Detroit. It is not only a brochure of which any printer should be very proud, but it also describes a new idea of linking headquarters of the engineering profession with educational facilities, all in a building designed with complete facilities for both purposes. — From Jacobs in Vermont the latest report is that he has the added chore of being air-raid warden for his block in Burlington, and he has been getting instruction in his duties by visiting the capital at Montpelier.

The newsy letter of the season has arrived from Con Young in Florida, who reports the events since last summer.

Incidentally he paints a most glowing picture of Florida attractions and urges the Secretary and other classmates to come to that state and have a taste of the delightful weather southern Florida always dishes out from mid-March through April, when stormy skies are rare. Con and Abby this year are in a bungalow at Fort Myers. They have learned from long experience to be well equipped with plenty of clothing for themselves and for the beds so as to be able to deal with some of the cold snaps that visit Florida. Houses there are not built to keep out cold, as they are in New England. Last June, Con was not in top-notch shape, but the extraction of an offending molar during the summer aided considerably in dispersing the neuritis pain and ache. Hence by the end of August he was feeling just like his old self. Unfortunately Abby did not get through the summer so satisfactorily and had an anemic condition calling for complete rest in warm sunshine for five or six months. Con and Abby were able to travel by automobile to Florida but cut out some of their usual visits to various friends en route. Since their arrival the first week of November, Abby has made vast improvement. They were able to run in for an hour en route to see vonHolst at his beautiful Floresta subdivision in Boca Raton, about 20 miles south of Palm Beach. They found vonHolst busy as usual, getting his original 16 houses and the charming surrounding park in order for the winter season. He and Mrs. vonHolst are apparently doing very well. At the time Con's letter was written, on January 27, he reported that he had been busy as usual fixing up the yard, the flower gardens, and the house, with the result that already many small plants were in bloom and 30-odd buds were waiting for a few warm days to glorify a 17 by 4½ foot rose bed.

The death of Miss S. Annie Shorey occurred on February 14. She was with us as a special student in biology during our freshman year. She had reached the age of 97 years, having been born in Dedham November 27, 1844. She started her teaching career, in Minneapolis in 1862. The next year she went to the Dedham High School and taught there until she entered the Boston school system in 1870, being continuously employed at the Girls High School in the South End from that year to 1911, when she retired. Most of the time she was head of the foreign language department. Since her retirement, she had been living quietly in West Roxbury. She was a member of many school and educational organizations. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

### 1897

Recently a questionnaire was sent to members of the Class asking them if, in view of present conditions, a formal reunion should be held this year to mark the forty-fifth anniversary of our graduation. John P. Ilsley of the executive committee summarized the returns as follows:

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"Those in favor of holding a reunion, 8; number expecting to attend reunion, 9; number who did not favor holding a reunion this year, 37."

"It is true," Ilsley continued, "that several others voted in favor of holding a reunion but stated that although they would like to attend, for them to do so would be impossible. Four others said that they would try to attend a reunion if one were held, but they did not seem especially hopeful of being able to be present. Many interesting comments were made by members of the Class. One suggested that the gathering be postponed but not for so long as five years, and another member believed that we should wait until our fiftieth anniversary before holding another reunion. A suggestion was made that the money to be spent on the get-together might well be contributed to the M.I.T. Alumni Fund or used for purchasing defense bonds. Many seemed concerned as to whether they should go as far away as Osterville because of the wear and tear on their automobile tires. Therefore, the executive committee has decided to cancel our reservations at Osterville for June 5 to 7 this year. Later the group may plan a simple reunion, an afternoon and evening at a local golf club during the latter part of May or June, provided sufficient interest is expressed in so doing."

Ernest F. Learned is now representing the Cambridge Wire Cloth Company of Cambridge, Md. The company fabricates wire cloth in all kinds and sizes for industrial purposes. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

### 1900

At the annual meeting of the American Society of Civil Engineers, held at the Engineers Club, January 26, one of the engineers to receive a certificate of life membership for 25 years of membership and service was John V. Beekman of Chestnut Hill. — Jones, Morris, Sperry, and Stratton attended the November meeting of the Washington Society of the M.I.T.

We regret to record the passing of George Warren Cutting, I, civil engineer with offices on Summer Street, Boston, and town treasurer of Weston for the past 21 years, who died February 4 at his home, 50 Newton Street, Weston. He was born in Weston, where his father, George Warren Cutting, Sr., served as town clerk for 52 years. George Cutting, Jr., attended the Weston schools and the M.I.T. He was an engineer for the Weston aqueduct, a former engineer for the state board of fire underwriters, and one of the engineers for the fortress at Corregidor in the Philippines. His memberships included the American Society of Civil Engineers and St. Mary's Episcopal Church in Newton Lower Falls, where funeral services were held. He is survived by a widow, the former Helen Ellms Warren; a daughter, Miss Mary Cutting; and two sisters, Mrs. Arthur B. Nims of Weston and Miss Eleanor Cutting of San Diego, Calif.

1900 *Continued*

Have any of you readers any suggestions in regard to a class get-together some time around the date of the Alumni Dinner, which we understand is to be held this year on Saturday evening, April 25, at the Hotel Statler? Any ideas will be welcomed.

Recent changes of address are as follows: Harris G. Hooper, 451-3 Washington Avenue, Brooklyn, N.Y.; William H. Hubbard, Office of Constructing Quartermaster, Box 2055, Ancon, Canal Zone; Sullivan W. Jones, 1217 Hillyer Place, Northwest, Washington, D.C.; Dr. Morton C. Mott-Smith, 5924 Graciosa Drive, Hollywood, Calif.; Frederick W. Withersell, 1628 Collingwood Boulevard, Toledo, Ohio.—C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

## 1901

Our President, Bob Williams, who is engineer for the Submarine Signal Company, Boston, writes that he is busy with submarine signal apparatus. He cannot describe this apparatus, of course, but says that it is very effective for locating submarine and surface vessels. His son-in-law is now a first lieutenant in the Army and is located with his family somewhere in the South.

Ed Church reports that he is professor of mechanical engineering and head of that department at the Polytechnic Institute of Brooklyn. He has been there since 1918. The school is fairly large, with day and evening sessions and a graduate division. Ed specializes on steam turbines and has written a book and some articles on that subject.

In filling out the class data sheet, briefly, Theodore Lange of Springfield, Mass., says that he is occupied in taking care of personal real estate. Also he is interested in the Technology Club of the Connecticut Valley, which was reorganized in 1939. The Club meets in Springfield four times a year, with an average attendance of 50.

Bob Derby is back in harness again after having retired in 1938 as vice-president of Niles-Bement-Pond Company in New York City. He is now with the tools branch of the War Production Board in Washington, where his 30 years' experience in the machine-tool industry will be useful.

We have at hand the Newcomen bulletin for North America, which announces William M. Vermilye as the guest of honor and speaker at the dinner which the Newcomen Society of England held at the Franklin Institute of the State of Pennsylvania in honor of the 236th birthday of Benjamin Franklin. The bulletin goes on to state that Mr. Vermilye, Vice-president of the National City Bank of New York, lecturer in economics before Princeton University, and founder of the Vermilye Medal, is American treasurer of the Newcomen Society of England. The Vice-president of our Class, Phil Moore, is also a member of the Newcomen Society.

We have received the reports of three deaths: Harry G. Koch, on June 9; John M. Hood, Jr., on June 16; and Hector

MacNeil, on August 24. Harry Koch lived in Milwaukee and was assistant engineer of Milwaukee County; John Hood resided in Baltimore; and Hector MacNeil was with the highway department, Cabot House, Sydney, Nova Scotia.—GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-266, M.I.T., Cambridge, Mass.

## 1902

Through the Alumni Association word has been received of the death, on October 24, of A. E. Hansen, XI, at his home, 175 Forest Avenue, Staten Island, N.Y. Hansen had for years been actively engaged in the practice of sanitary engineering with headquarters in New York City and had been consultant on many projects. He specialized in the design of sewage-purification and water-supply systems and the supervision of their construction. In his early years he was successively with the A. D. Fuller Company and the E. M. Porter Company of Springfield, Mass. Subsequently he became assistant to Paul Gerhard, consulting engineer in New York, and then for several years was associated with the firm of Lederle and Provost of the same city. Later he opened up his own office and continued the practice of sanitary engineering until the time of his death. In 1923 he served as one of a committee of five which investigated and reported upon plumbing design and materials, their simplification and standardization, and the existing plumbing code. The committee then presented a standard code to bring the old practice in line with the scientific knowledge of the day.

Many changes of address have been received since the last notes. Bert Haskell went with the Artisan Metal Products, Inc., of Charlestown, Mass., last December and is busy at various ammunition plants. Lewis E. Moore is now back in the service as colonel in the Corps of Engineers on special staff work. His son, Luther Samuel, is a major in the aviation branch of the Marine Corps and was at Pearl Harbor. Henry B. Barry has left Chicago and is now at the Jersey City Quartermaster Depot, 26 Exchange Place, Jersey City, N.J. Harlen M. Chapman has changed from Troy, N.Y., to 6521 Ridgewood Avenue, Chevy Chase, Md. William N. Brown is now at 4611 West Virginia Avenue, Bethesda, Md.

The question of class reunion is at present very much in the air, but by the time these notes are read it may be settled. We can meet at the Oyster Harbors Club, June 5 to 7, if we wish, and the Secretary would very much like an expression of opinion from those who feel that the meeting should be held. Circumstances are such that even though there are a few or many, we can get the accommodations.—BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston, Mass.

## 1903

Ralph H. Nutter, II, for the past 35 years a wholesale distributor of forest products, died suddenly at his home in

Beach Bluff, Mass., on December 26. For several years he had had a heart trouble that required him to take things easy but had not prevented his attendance at most of the class events of the past 10 or 15 years. He seemed in the best of health on Christmas Day, and his death on the next day was a shock to his family and friends as well as to the town where he was widely known. A native of Lynn, Mass., he had had an office there practically ever since he was graduated from M.I.T. For many years he was one of the library trustees of Swampscott. He is survived by his wife, Frances Greene Nutter; two daughters, Mrs. Charles F. Buckland and Miss Marianna Nutter; and a son, John, all of Swampscott. Many of us who did not know him very well while in Technology came to look for him with pleasure at the recent reunions. Our sympathy goes to his wife and family.

ARTHUR F. BENNETT, III, died in Buenos Aires on December 1. He had been associated with various mining interests in the United States, Alaska, Canada, and Mexico for many years before he went to South America in 1925 to locate new mining fields for the St. Joseph Lead Company. At the time of his death he was president of Compania Minera Aguilar, S.A., an Argentine mining company producing lead and zinc concentrates. Bennett, who was unmarried, left a brother and a sister—Julian G. Bennett of New York and Miss Beatrice Bennett of Arlington, Mass.—We have also received brief notices of the deaths of Frederic C. Hirons, IV, and Frank A. Sherman, III. Further information about them will appear in a forthcoming issue of The Review.

WILLIAM E. MITCHELL, VI, Vice-president and general manager of the Georgia Power Company, has been made chairman of the utilities division of the Greater Atlanta Defense Council, which is to facilitate the city's defense.

The winter dinner of the Class was held Saturday evening, February 14, at Walker Memorial, with Aldrich, Fred Crosby, Cushman, Eustis, Gould, Carlton Green, George Greene, Haskell, Howard, Jackson, Peaslee, Sears, and Stiles present. It was the largest attendance at a mid-season dinner that we have had in the memory of the present Secretaries. Old and present times were discussed, and preliminary plans for our fortieth anniversary were talked over in the light of present conditions. Further plans concerning our fortieth will appear later, but the consensus was that we should try to get a goodly number for our table at the Alumni Dinner on April 25 at the Hotel Statler in Boston. The names were read of those in the Class who have died during the past year: Arthur F. Bennett, Mortimer Y. Ferris, Isaac T. Haddock, Thomas M. Hamilton, Van I. Nettleton, Ralph H. Nutter, J. Albert C. Nyhen, Herman A. Scherer, and Frank A. Sherman. We wish to have the relatives of those who have passed on realize that on this occasion they were remembered by us and that we desire to extend our sympathy in their loss.

1903 *Continued*

The Secretary, on a recent visit to Purdue University, was honored at a very enjoyable luncheon party arranged by A. A. Potter, dean of engineering at Purdue. It was obvious to your Secretary that Potter is greatly respected on his job. On a wall in the university union, or clubhouse, is a large leather medal which is awarded yearly at Sigma Delta Chi's gridiron banquet for the greatest contribution to the welfare, success, and reputation of Purdue, and among its recipients is Potter. Congratulations! — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston, Mass.

### 1905

We hear of several changes of addresses, which indicate new activities of classmates, probably in connection with the war program. Ross P. Schlabaugh, XIII-A, has apparently been transferred from Newport News to Cleveland; Clayton M. Simmers, XIII-A, from Boston to the New York area; Scott C. Runnels, M.D., has left his position as chief of division of gynecology at a Cleveland hospital to serve at Camp Shelby, Miss. — Russell Willson, I, recently reported as superintendent of the United States Naval Academy at Annapolis, Md., was ordered to duty December 23 as chief of staff to Admiral Ernest J. King, commander-in-chief of the United States fleet. — Henry A. Wentworth, VIII, is head of the draft board in Newton, Mass., squeezing out about half of his time for this important work. His oldest son, who stayed in Paris for a year after the Germans took over, got out in time to avoid a concentration camp and is now Boston manager for the Home Insurance Company of New York. Harry's youngest volunteered a year ago, worked up to staff sergeant, and was recently selected as one of 47 in the first class of the new school at Indianapolis for finance officers. Harry did get time enough last year to manufacture ten million metal boxes, 50 per cent for priority rating for army and navy use. His 20-millimeter shell plant has a line producing for the Army and another under way for the Navy. — Many of our men could probably tell similarly interesting stories of their connections with the war program. The Secretary hopes they will do so.

Edwin Bruce Hill, IX, the proprietor of the Edwin M. Hill Lumber Company and chairman of the board of the W. G. Gilmore Drug Company, Pittsburgh, Pa., has been selected as president of the Shady Side Academy of Pittsburgh. Who, knowing Bruce 40 years ago, thought we had a "Mr. Chips" in the making?

Charlie Smart, II, writes that his plant in Troy, N.Y., is 90 per cent on war work, mostly as prime contractor. Charlie proudly announces himself as a grandfather again. Members of the grandfather club take notice. — Carl E. Danforth, III, thought he had retired from the wholesale grocery business in 1938, but circumstances required his return last August as president of the Arthur Chapin Company, Bangor, Maine. — While in

New York recently, I called on Erwin F. Bender, XIII, who is New York sales manager for the Kinney Manufacturing Company of Boston, maker of oil-handling and high-vacuum pumps. He has had charge of much important oil-handling layout in connection with the maritime trade. He almost promised to reunite with us sometime.

Among the many Christmas cards the Secretary received from classmates was one from Middletown, Conn., picturing Remorseful Ros and Healthy Helen Davis in a pre-Christmas mood. We are framing it for exhibit at the next reunion.

Since the last issue of The Review we have had a letter from the widow of Adolph J. Ortseifen, XIII, who died in Chicago on November 3. He was president of the Britten-Ortseifen Construction Company of Chicago and later president of the Leyden-Ortseifen Company until it dissolved after the death of Mr. Leyden. Ortseifen was a member of the Chicago Athletic Club, Chicago Yacht Club, South Shore Country Club, and the Officers Club of Washington, D.C. He served as a captain in the Quartermaster division during the World War. Ortseifen retired from business about five years ago. In 1918 he married Winifred Dalton, daughter of the late governor of Prince Edward Island, Sir Charles Dalton. Besides his widow, Ortseifen left a son, John, who is a student at the Illinois Institute of Technology. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 137 Newbury Street, Boston, Mass.

### 1907

Late in January Mr. and Mrs. Frederic Eugene Banfield, Jr., announced the engagement of their daughter, Jane Lincoln Powers, to Arthur B. Ferguson of Durham, N.C. Miss Powers, daughter of the late Hiram Stevens Powers, is a graduate of Sarah Lawrence College, Bronxville, N.Y., and at present is connected with the Presbyterian Hospital in New York. Gene Banfield is works manager of the Whitin Machine Works, manufacturers of textile machinery, at Whitinsville, Mass. — A brief note received from Harold S. Wilkins indicates that he is now a lieutenant colonel in the United States Army, stationed at Picatinny Arsenal, Dover, N.J.

I have been greatly pleased to receive communications directly from two classmates from whom I had previously heard nothing since 1907. One of these, William A. Young, who was with our Class for the first three years of our undergraduate life, in Course I, was associated with his father in the hardware business from 1906 to 1919 and then succeeded his father as proprietor of Young's hardware store, 135-137 Water Street, Exeter, N.H. He is also vice-president of the Exeter Banking Company and a trustee of Exeter Hospital. His home address is 175 High Street, Exeter. He has a daughter, Rebecca, who was graduated from the University of New Hampshire in 1931 and is now married.

## THE TECHNOLOGY REVIEW

Also word has come from Andrew N. Rebori, who was a special student in Course IV with our Class and also took a fifth year at Technology doing graduate work. From 1908 to 1909 he was the holder of the M.I.T. Traveling Fellowship in Architecture at l'Ecole des Beaux Arts in Paris and also studied at the American Academy in Rome until 1910. He spent a year as a designer in the office of Cass Gilbert '80, architect, in New York and then for three years was associate professor of architecture at Armour Institute of Technology in Chicago, from which he received his B.S. degree. For the next six years he was junior partner with Jarvis Hunt, architect, and from 1920 to 1932 was senior partner of Rebori and Wentworth. Since that time he has been a consulting architect with office at 435 North Michigan Avenue, Chicago.

He was a contributing editor of the *Architectural Record* from 1911 to 1919 and since 1940 has been editor of the "Building Question Box," conducted by the *Chicago Sunday Times*. From time to time he has given lectures before institutes and art forums on "Modern Lighting," "Streamline Design," "History of the Modern Stage," and so forth. He was Lincoln Park (Ill.) architect from 1916 to 1924 and is a member of the American Institute of Architects, and of the alumni association of the American Academy in Rome. Among the important buildings for which he has been the architect are the 41-story LaSalle-Wacker Building in Chicago; Cudahy Memorial Library and Della Strada Chapel at Loyola University, Chicago; Wheaton Post Office, Chicago; Curtiss Airport, Glenview, Ill., now a United States Naval Reserve base, shops and administration buildings, additions to this base; Racquet Club, Chicago; Riding Club, Chicago; and he executed a design for completely protected underground hangars in February, 1941. Andrew was married in 1912 but his wife died in 1916. He has two children: a daughter, Nanneen, now Mrs. Theodore Frothingham of Bass River, Mass., the mother of a boy and a girl; and a son, Andrew P. Rebori '39, now combat pilot of the United States Army Air Corps, who was recently married (see March 1907 notes).

An Associated Press article appearing in the *Boston Herald*, February 10, dated at Washington on February 9, stated: "Admiral Emory S. Land [XIII-A, S.M. '07] became virtually a czar over all phases of wartime merchant shipping today. Creating a War Shipping Administration to control operations of ocean-going merchant vessels, President Roosevelt named to head it the 63-year-old retired naval officer who already is chairman of the Maritime Commission, which directs the mammoth emergency shipbuilding program. Thus Land was charged with the responsibility not only of turning out cargo ships needed to win the war but also of seeing that those completed are used to the best advantage. . . . He was given power to control the operation, purchase, charter, requisition, and use of all ocean vessels under the flag

1907 *Continued*

or control of the United States,' except fighting ships, and those engaged in coastwise, intercoastal, and inland transportation. . . ."

A very interesting letter received late in January from Ralph Crosby tells of his dropping the job he had in the engineering department of the state of Illinois, and becoming on January 1, 1941, chief engineer for the Lourie Manufacturing Company, 2700 Yale Boulevard, Springfield, Ill., engineers, founders, machinists, whose principal products are hydraulic presses and bronze navy reducing valves, although they have some 300 products in all. Ralph has a splendid family — wife, seven children, three sons-in-law and seven grandchildren — a grand total of 19, all living. As far as I know, Ralph holds the '07 record in this respect. His two oldest girls married brothers, one, John L. Thomas, being an assistant engineer in the Chicago office of the Illinois State Highways division, and the other, Robert L. Thomas, a foreman for Wrisley's Soap Company in Chicago. The third daughter is single, the fourth married to Edward J. Blum, a commercial artist in Chicago. Ralph's one son is single, manages a gas station in Jacksonville, Ill., and is taking postgraduate work on the side at MacMurray College in Jacksonville, having recently received an Illinois teacher's license in zoology. The two younger daughters are single. Ralph says that he is going to try every way possible to attend our 35-year reunion at Oyster Harbors, Osterville, Mass., June 5 to 8.

Referring to this reunion, I was talking with Howard Chase, who is contracting engineer for the James H. Tower Iron Works of Providence, R.I., and he said that he surely plans to attend. Bob Thayer, Vice-president of Simmons-Boardman Publishing Company of 30 Church Street, New York City, publishers of 11 different trade magazines, and handbooks relating to railways, locomotives, and transportation, wrote me on February 4: "I really am going to make a very determined effort to be at the reunion. Unfortunately, these reunions in the past have come at a time when I have been extremely busy, but this year in view of the war situation, I may be able to make it. I have always wanted to attend, but it has just been impossible for me to do so. I hope you will get a good crowd out." — Judging by the wide-spread interest, it looks as though we shall, Bob.

Harold Farrington, whose home address is R.F.D. 1, Danbury, Conn., whose personal office in New York is at 43 Cedar Street, and who wrote me on January 27 on the letterhead of Commonwealth Gas System, Inc., 20 Pine Street, New York, says: ". . . At the present time and for the past three years I have been president of Commonwealth Gas Corporation, which company has a number of subsidiary and controlled companies, the largest and most important of these being West Virginia Gas Corporation and Memphis Natural Gas Company. The latter company does not distribute gas in

Memphis, but owns the pipe line through which all of that city's natural gas requirements are carried."

"In addition to my responsibilities in connection with these companies, I have also been president of the Standard Stoker Company for several years. This company is the largest manufacturer of locomotive stokers. We do no domestic stoker business. This company at the present time is doing a certain amount of defense work and will probably do more.

"I am surely looking forward to the reunion next June, and I feel certain of attending. . . . — BRYANT NICHOLS, Secretary, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

#### 1909

Paul Wiswall, in Charlie Main's absence, writes: "I hear good news from Charlie Main who, like myself, has seen rather too much of the medical profession lately. Both of us are making good recoveries from our recent 'indispositions,' if that is the polite and correct word to use. In a note to Charlie, Art Shaw admits that all of us may not be as full of zip as we may have been at, let's say, age 35, but I still feel that we may have a kick or two in us after all. — A long letter has come from Bob Doane, who is now back at his old job with Anaconda at Hastings-on-Hudson, N.Y. I wish I could get it all into The Review. I can tell, however, of a floating cable, though tennis balls provided the buoyancy. The cable was made in black secrecy, they hoped, but *Popular Mechanics* came out with a detailed description of the whole business! Bob's son, Duncan, whom I know pretty well and who is a swell boy, went south with the Seventh Regiment and was detached to go to school at Fortress Monroe, Va., where he is now staff sergeant. He has sent word to Bob about frequencies of 600,000,000 cycles a second! My Course was V and I have nothing to say about such figures; I am rather overcome with admiration for that kind of work. — John Nickerson has gone to Washington from his place with Cheney Brothers, Manchester, Conn. He is chief of the industry section of the labor relations branch of the War Production Board. — Sam Main, Charlie's boy, is with the road company of *Junior Miss*, which is touring the army camps.

"The other night in the New York *Sun*, under the heading, 'The Stars of the Week,' was this caption: 'A Senator Eyes a Comet.' And here are a few words from the *Sun*'s article: 'Whipple's comet has already been seen with powerful binoculars. State Senator Thomas C. Desmond of Newburgh writes that after reading our article on the comet last Friday he found it that evening without any trouble.' — Isn't that just like Tom? What a man! It was not so long ago either that Tom discovered a rare sea bird down on the shores of Long Island. What a man!!

"As I have said before in these notes, the war seems close — too close — to one who was for several months in the

theater of war in the southwest Pacific. Shortly after Singapore fell, the papers carried a cut of the Raffles Hotel, the only hotel in the world, except the faithful Waldorf in New York, for which I confess a feeling of affection. As a hotel, the Raffles had many shortcomings when I stopped there on two occasions. But as a place from which to see the world go by, there may not be any other such place anywhere. As in all tropical hotels, you lived outside your room; you entered your room only to sleep. Every ship going from the Far East to Europe or from the China Sea and the Pacific to the Indian Ocean stopped at Singapore. Everyone went ashore, and that meant a call at the Raffles. There were in those days Frenchmen, going to Indo-China, wearing the streamline tropical helmets that no one else wore; Dutchmen, going from Holland to Java; Britons, in huge tan helmets made of cork, going everywhere; dignified Parsi merchants in long black coats, who had come down from Bombay or Karachi; fat and quite naked chetty merchants, with yards of cheesecloth about their loins and caste-marks in their foreheads and umbrellas in their hands; your own fellow countrymen, stirring about much as at home though they were but about 80 miles north of the equator. A fascinating lot of folks!

"The rickshas were pulled by Chinese — Singapore is a Chinese city — and these men had legs like those on the Chickering grand piano that my Mother had in our home when I was a youngster. The street sweepers were all Tamil coolies from near Madras, their legs the size of broomsticks from knee to ankle! I suppose the Malay natives still play soccer near the hotel. They played it barefoot, but I could not see that they had any difficulty in kicking the ball all over the place! I used to watch, trying to see how they kicked so far and so well. I never did find out, though one is told they kick with their insteps and not with their toes. If I had had Harold Edgerton, '27, and his cameras along with me, I might have discovered the low-down. We might plan to go when things get quieter, but I do not want to go while the Japs are there. In fact, I am wondering whether I can go to my beloved Java even in another five or six years, when I retire. Somehow I cannot relish Singapore with no union jacks on the post-office flagpoles.

"Speaking of the British flag, I arrived in Singapore for my second time on a fine new British motor ship called the *Glenariffe*. I must have been the only passenger who disembarked there. At any rate, I somehow missed reporting to the authorities; I was never properly charged into the colony. When I left and had my passport stamped, I was asked when I arrived and how. I told them. They looked in the record and looked at me. Then they told me something like this: 'Well, there you are in the very flesh. But are you really you? You want to go. But, really now, did you ever arrive? How can we charge you off our books when you aren't here — at least according to the records?' I made an awful mess

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of the records but I still have a souvenir of that call at the British passport office. I snatched a piece of real, original, simonpure, aged-in-the-wood official British red tape; and I'll show it to anyone who wants to see it!" — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

### 1910

It is with sorrow that we have received a notice of the passing of our classmate Austin Blake Mason on February 5. The following is from the *Boston Herald* of February 7: ". . . Mr. Mason was born in Boston, the son of Mortimer Blake Mason and Mary Emma Phillips. He attended Noble & Greenough School and was graduated from Harvard College with the class of 1908. While at Harvard he was a member of the track team. Following his graduation, he attended Massachusetts Institute of Technology for two years and received a B.S. degree in civil engineering. For three years he was employed by Stone & Webster in construction work on the West Coast, and on his return to Boston he practiced engineering. In March, 1916, he joined the American Ambulance Service, working with the French Army, and later the American Field Service. He was in charge of an ambulance unit and saw service at Champagne, at Verdun, at Somme and the Argonne. His ambulance unit was cited three times. After the war, he returned to Harvard as a research associate in civil engineering at the Harvard Graduate School of Engineering. At the 25th anniversary reunion of his class, he was chairman of the executive committee. He was treasurer of the Massachusetts Mohair Plush Company for about 10 years and remained as a director of the company until the time of his death. He was also a director of the Industrial Aid Society. Mr. Mason leaves his widow, Mrs. Margaret Bliss Mason, whom he married Sept. 15, 1917; a daughter, Mrs. Edward Motley, Jr.; two sons, Austin B. Mason, Jr., and Henry Bliss Mason. . . ."

The following is from the *Newark Engineering Notes*: "Professor Harold Neff Cummings, recently appointed Vice-President of the Newark College of Engineering, richly merits this new honor and advancement which has come to him in recognition of his outstanding ability and many years of unassuming and conscientious service and markedly efficient accomplishment as an educator and administrator. Born in Oxford, Maine, in 1884, Professor Cummings received his early education in the schools of that state and obtained his A.B. degree from Bates College in 1906. Membership in Phi Beta Kappa and the award of the highest general honors on graduation attest to his early educational accomplishments. His interests lay in teaching and in civil engineering. Upon graduation he served for two years as instructor and house master at Worcester Academy. To further his engineering education, he then attended

Harvard University Summer School and the Massachusetts Institute of Technology, taking his S.B. degree in civil engineering at the latter institution in 1910.

His connection with the Newark College of Engineering began in 1920 with his appointment as Professor of Applied Mathematics and Head of the Department of Mathematics. In 1927, he was appointed Professor of Civil Engineering and Head of the newly formed Civil Engineering Department of the College, which position he still holds. Aside from his education accomplishments this ever-busy man has done considerable private work as a surveyor and engineering consultant, particularly during the early years in Delaware and at Newark. At present he is serving as Treasurer of the Essex County Mosquito Extermination Commission. Civic affairs have received much of his time and attention. Professor Cummings is a member of the American Society of Civil Engineers; the Society of American Military Engineers; The Society for the Promotion of Engineering Education; The American Society for the Advancement of Science; The American Association of University Professors; a fellow of The American Geographical Society; and a Professional Engineer registered in New Jersey. His honorary society memberships include Tau Beta Pi and Phi Beta Kappa." — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

### 1911

A bit belatedly, but none the less gratifyingly, comes word of a splendid honor paid Don Stevens, II, by the New Jersey Taxpayers Association at its eleventh annual meeting at Newark, December 13, when he was given a handsome silver plaque "as an expression of esteem for his earnest devotion to the interests of the taxpayers of New Jersey for more than a decade and for his untiring, unselfish, and inspiring leadership as president of the association for the past four years."

At a testimonial luncheon to Don, the speakers were unanimous in their praise of his courage, clear thinking, and sincerity in his leadership of New Jersey's organized taxpayers. They gave special attention to Don's threefold policy of "economy in government — no new taxes, no new bonds." All expressed keen regret in the loss to New Jersey's taxpayer movement of a leader who has achieved outstanding and far-reaching results in his office.

Typically Stevens are the seven reasons Don gave in his "swan song" for retiring after four years in the presidency: (1) Ten years are a long time. (2) If I had been less active I might have lasted longer. (3) There is danger that one man long in office may become a dictator. (4) During the depression years I have taken about 50 per cent of my time from my business . . . I cannot afford to do this now. (5) I have been away from home on many evenings throughout these years. (6) Battling overwhelming odds is a very considerable drain upon one's energies and there comes a time from the health

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standpoint alone when the work should be passed on to others. (7) Despite the wholehearted co-operation of our directors, I have never been able to devise any means of unloading the work — I think another man might find a way to do this."

In a gracious acknowledgment to my letter of congratulation, Don wrote that he "started in early January, '32, because the depression was at its worst and it seemed that everybody should do his bit. . . . This was in my home village of Ridgewood. Within a couple of years I was asked to build up a Bergen County federation, which I did. Then in 1938 I was elected to head the state association, so you see in all I have completed a cycle of 10 years and am still a director and member of the state executive committee." — Thanks a lot, Zim, for sending me the information, and I agree with you that Don has the wisdom of Solomon as evidenced by that sentence in his speech: "During all these ten years I have consistently urged and adhered to a three-point program: (1) economy, (2) debt reduction, and (3) no new taxes."

Congratulations also to Pete Gaillard, VI, and Carl Richmond, I, who have both been promoted from major to lieutenant colonel — Pete in Ordnance and Carl in the Corps of Engineers. Both are connected with the Office of the Undersecretary of War in Washington. Pete heads the ordnance section in the production branch and Carl is in the fire protection section, and their offices are close together. Carl has recently completed the writing of a manual, *Plant Protection Inspector's Manual*, and a pamphlet, *Plant Protection for Manufacturers*. Both of them are splendidly conceived and excellently executed, I find. Carl says that Harold Lord, II, stopped off en route from Boston to Mobile, Ala., to have lunch with him in early February. Harold may be recalled to active army duty in the near future.

Good news from Richmond, Va., prompts more congratulations — these to Don Frazier, II, who was unanimously named president of the Richmond Kiwanis Club for 1942. "Don is a charter member," says the announcement, "and has not missed a Kiwanis meeting for 21 years. He has always been active in club, fraternal, and church affairs." Practically coincidental with this distinction, Don was reappointed for another five-year term as M.I.T. Honorary Secretary for Richmond and vicinity. Nice going, Don; we know you deserve the honors! — One more shoulder pat: Fred Daniels, VI, was re-elected president of Riley Stoker Corporation in mid-February. Pursuant to his forward-looking policies, Fred has recently had completed a four-reel movie depicting steam plant engineering. Titled "Design and Construction of Riley Steam Generating Units," it took a full year to produce.

Lishe Fales, II, transferred his headquarters from Wright Field, Dayton, Ohio, to Civil Aeronautics Authority, 3522 Porter Street, Northwest, Washington, D. C., and Clarence Ofenstein, I, noted civilian aeronautical engineer, left the capital and is now at 4120 Hilldale

1911 *Continued*

Road, San Diego, Calif. Address changes not involving change of city include those of Roger Boyden, I, 6372 31st Place, Northwest, Washington, D.C.; Emmons Whitcomb, X, 71 Bay State Road, Boston; Allison H. Whorf, III, 168 Cedar Avenue, Arlington, Mass.; and Fred Woodlock, II, 21 Ricker Terrace, Brookline, Mass.

Even though you're saving paper for Uncle Sam, mates, don't forget it's patriotic to write postal cards — for you, and you, and YOU are the ones who make class notes. Your Secretary just writes them. Get it? — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

## 1912

The push of business has prevented our having any notes in the last several issues, a fact which we deeply regret. Our intentions are good, and we are going to do better.

It is with sorrow that we announce the deaths of four members of the Class. Frederick E. Poor, who had been with the Pitney-Bowes Postage Meter Company of Stamford, Conn., since its organization 20 years ago, died on August 5. Largely through his initiative and engineering ability, the company's stamp-canceling machine was developed. — Ralph H. Doane of Milton, Mass., passed away November 6. Doane was very prominent as an architect, having received the Harleston Parker Gold Medal in 1927 for the "best architectural work in metropolitan Boston." In 1930 he won three prizes awarded by the Boston *Herald* for architecture in New England. He served as Boston schoolhouse commissioner and was a member of the American Institute of Architects, the Boston Society of Architects, and the National Advisory Council on School Building Problems. At his death, Doane was serving on Mayor Tobin's committee for the revision of the building code in Boston. He leaves his widow, Mrs. Katharine Dorr Doane; a daughter, Josephine; his mother; and a sister.

William G. Hammerstrom, who passed away in Radford, Va., on January 25, had been with the Glamorgan Pipe and Foundry Company of Chicago for the past several years. — The death of Henry N. Otis of Danvers, Mass., occurred last summer.

Jerome C. Hunsaker has been extremely active in Washington as chairman of the National Advisory Committee for Aeronautics. — Another of our classmates who is outstanding in airplane engineering is Frank W. Caldwell, who developed the Hamilton Standard hydromatic quick-feathering propeller, which is used on practically all planes. — Elliot W. Tarr, writing from Stranraer, Scotland, where he is stationed as a civilian technician building bases for the United States Army, comments at length on the weather. According to him, it is even worse than the brand they have at Gloucester. — FREDERICK J. SHEPARD,

Jr., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. MCGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

## 1913

The following was released in January from the United States Army Quartermaster's Office, Sixth Corps Area, Chicago: "The advent of the new year brought two new honors for Edwin C. Gere, Quartermaster Corps. . . . Announcement of his promotion from lieutenant colonel to full colonel was made January 1 by the War Department at Washington. The same day Major General J. M. Cummins, commanding the Sixth Corps Area, appointed Colonel Gere quartermaster of the Sixth Corps Area, with headquarters in Chicago. Formerly executive officer of the Sixth Corps Area Quartermaster Office, Colonel Gere succeeds Lieutenant Colonel Orville Jackson, who retired under the mandatory age-retirement rule.

"A native of Syracuse, N.Y., Colonel Gere attended Central High School in that city and later the New York Military Academy, Cornwall on the Hudson. His military career began in 1907 when he enlisted as a private in the New York National Guard. As a member of the First New York Cavalry from Buffalo he served on the Mexican border in 1916, and when the United States entered the first World War he was appointed a second lieutenant of cavalry in the regular Army. He was named a captain in 1920. He has been a member of the Quartermaster Corps since 1928, was promoted to major in 1935 and lieutenant colonel in 1940. In 1931 Colonel Gere held the post of chief of the new construction branch of the Quartermaster Corps, with headquarters in Washington. He has served as constructing quartermaster in the Philippine Islands, at Langley Field, Va., and Fortress Monroe, Va. During the 1940 maneuvers in Wisconsin he acted as quartermaster for the Second Army.

He is a graduate of the Army Cavalry School; the Command and General Staff School; the Army Industrial College and the Army War College. Colonel Gere is the son of Mrs. I. N. Gere, 535 Oak Street, Syracuse, N.Y. His daughter, Vera, is a freshman at Syracuse University. With his wife and two sons, George and Irving, the colonel makes his home in Winnetka, suburb of Chicago." — Ed, who spent four years with 1913, Course I, attended our 25-year reunion.

Bob Weeks, VI, has been an engineer with DuPont for nearly two years, working on some of their extremely large jobs. His two daughters are married. He continues his interest in the building of wind turbines of his own design. They use a single blade, of airfoil section, deliver alternating current, and are adapted for use in isolated and inaccessible locations. — Arthur Townsend wrote: "While dining one night in January at one of the famous Howard Johnson roadside restaurants, I happened to glance up at some new arrivals, and who should be in the

group but George Richter. George, you will remember, was for many years with the Brown Company in Berlin, N.H., but for the past couple of years has been at the Eastman Kodak Company in Rochester, where he often sees Gerry Lane, though they are not directly associated. Richter had with him his son, George, Jr., and the latter's wife. George, Jr., will be graduated from the Institute this year with a master's degree in Chemical Engineering. I had a pleasant chat with them for a few minutes."

Larry Hart, Class Agent, says that 1913 is \$2,020 short of our modest quota of \$3,380. We need \$20 a head from 100 men. Your share is easy to calculate in the light of your means and your duty.

Please note migrations: E. E. Gagnon, II, from Birmingham, Ala., to Oak Park, Ill.; Al Ranney, I, from Uvalde to Corpus Christi, Texas. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 784, Pawtucket, R.I.

## 1914

Classmates certainly have gone in for the paper-conservation request in a big way. Not a single letter was received during the month and, what is even worse, not a single reply has been received to the letters your Secretary has written. To survive, these notes require co-operation. — Speaking of paper, it is interesting that O. C. Clisham is branch manager of the Household Paper Products Company of Detroit, Mich. Clish is located in Boston and is prepared to take care of 150 varieties of paper requirements of '14 men.

Just two years from now will be our thirtieth reunion. Ordinarily plans are started two years ahead. In view of the war situation it seems too difficult to predict what conditions will be in June, 1944. Therefore it seems best to your Secretary to defer formal plans. The tentative plans as agreed on at our twenty-fifth were for a stag reunion at some spot having general recreational facilities, particularly golf. The Oyster Harbors Club on Cape Cod, where we went for our twentieth, was suggested as a suitable place. Your Secretary would welcome any suggestions in regard to plans for the thirtieth. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

## 1915

In addition to being your Class Secretary, I now have the new job of being the Class Agent. Jack Dalton recently relinquished this to me. Let's show the Alumni Council that we can hit our quota with that good old '15 spirit. The Fund needs an average of \$15 a man. No matter what you gave last year, give again this year. If you gave less than \$15, raise your ante to the \$15 average. If you gave more than \$15, give it again and make it generous — whatever you can afford.

You will all probably agree that the following letter from Lucius Bigelow is an outstanding contribution to these notes. To hear from him is certainly a

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pleasure: "Enclosed you will find my check for class dues. It has now been two years since I promised you a letter — and promised it somewhat pungently, as I read later in *The Review*! Keeping promises, about letters, often isn't so easy, but when I do agree to something, I mean to carry it out, especially to 'Help Azel'!"

"The last time I wrote at length was perhaps in 1935 just after I had returned from my year as exchange lecturer at Edinburgh. We were treated splendidly in Scotland, but the good old Statue of Liberty never could have looked finer than it did that early morning in July, 1934, as we came up New York Harbor. Back home in the apartment in Durham, N.C., we promptly became absorbed in a new project — building a home. This may well look ordinary enough in retrospect, but in prospect for the first time, it was quite as challenging as our trip to Europe had been. In a university development about  $1\frac{1}{2}$  miles from the campus we bought a lot comprising about half an acre, with a 19-foot frontage on a corner. The whole area is covered with trees, mostly pines, but I still find pride in the fact that on our land, right in front, stands the largest pine tree on the whole street. Incidentally, the university had paved the street, provided all necessary sewers, and had installed sidewalks. When we bought, there were almost no houses; now, practically every lot is taken and all by members of the university community.

"All important then were plans, architects, contractors, and where shall we find enough wherewithal? My wife even made a cardboard model of the house to scale, including every important article of furniture we owned all set in place. We even moved an electric light progressively around the outside to represent the course of the sun throughout the day. At last our Dutch Colonial house was finished, and we moved in during August, 1935. I still remember my great disgust at making a slight dent in our pristine wood-work. You should see it now!

"We are situated just outside the city limits and so are in Durham County, where the tax rate is \$6.00 a thousand. I hope that makes you all wish you lived next door! I know because we own a little property in New England and pay not far from 10 times that tax rate. The university has been very good to us in many ways — permitting us to pay on our own terms, providing city-free services to reduce our insurance costs, and so on. This fact is important and helps a lot.

"Well, there we were, all alone in our new manor, and I had just been advanced to associate professor. It was clearly time for a new and larger adventure, so in November, 1937, we brought home Mary Elizabeth, aged 18 days. Whereupon our lives were completely revolutionized in one day. Well, time marches on. We survived, and so did Mary E. Therefore in December, 1938, we made another sally, and this time brought home Lucius Cummings, aged seven weeks. Then the fun began all over again, and whatever the little girl had not man-

aged to pull off, the boy did. Still, we survived, and now the children are four and three respectively, and doing fine, thank you. We would not be without them for anything in the world. I mention these incidents not because they are in any way unique — they are anything but that — but because the human twist is always of interest to me, and I hope that it may be so to others, even in this prosaic world, where almost everything is supposed to be taken for granted and where ever so little a display of human emotion is all too likely to be set down as an earmark of immaturity and inexperience. As a teacher of students I have long since learned that it is scarcely the part of moderns to grow old and sophisticated too fast.

"Duke University is an expanding and developing institution, and its chemistry department stands out front. With nearly a dozen staff members, almost all actively working in research, some 20 graduate students, and upwards of 500 undergraduates, the chemistry building hums with activity day and night, including a not inconsiderable measure of work for the national defense. My own work, consisting of the teaching of organic chemistry and research dealing with the vapor phase fluorination of organic compounds, has gone forward apace. Science is advancing so rapidly as to take one's breath away. I often have to tell a class that thus and so, which I taught in all good faith five years ago, is now completely wrong and must be replaced by the latest facts and theories. This fact makes me realize that five years from now no small measure of what we are so sure of today will have gone into the limbo of the past, to be replaced by something much better yet. No scientist worthy of the name can be conceited — for long! Since 1932 I have been privileged to send out some seven Ph.D.'s, all of whom have good jobs and all of whom I consider my friends. I cannot speak too highly of the ideas and efforts of these men, without which the advances of my research program would have been impossible. Also, association every day with these men, over a period of years, has left a permanent and valuable impress upon their director. It is not possible to teach even reasonably well without learning much, and in more ways than one.

"I have no trips to the antipodes, amassing of wealth, or stirring achievements to report. I think I said once before that there were progress, much effort, and some satisfaction. Since then there have been more progress, lots more effort, and increasing satisfaction. This last was given an additional boost when I received notice in September of my advancement to full professorial rank. My very best wishes to all my old friends and classmates, especially those in Course V. V stands also for Victory — and above all let us keep 'em flying!"

Loring Hayward of Taunton, Mass., writes: "On the day of the Boston dinner, word came over the radio that no cars were to be allowed to come into Boston, so I gave up the idea of trying. I wanted

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very much to see some of the fellows because some new work had been dished up to me that I knew nothing about, and I wanted some advice from some of the mechanical sharks. Also, my oldest boy is an ensign on one of the ships at Pearl Harbor, and we were not feeling in a holiday mood until we heard something from him. Thanks for the compliment about the extra money for class dues but, as I explained before, any spare cash (if ever) goes to my daughter at Massachusetts State College. I am still struggling along with Course II problems that are probably simplicity itself but quite tough to one who has stuck to Course I consistently. . . . They tell me that all salesmen just sit around nowadays and sneer at anyone who wants to place an order, and that they are getting worn out opening envelopes containing their commission checks. If you get too tired, bring out a batch and I will be glad to 'Help Azel.'

Elbridge Casselman is an Honorary Alumni Secretary in residence in Pittsburgh, Pa. "I have been hoping to write you a long letter for some time," he says, "and one would think that sending the enclosed check would be the grand opportunity. I have but little personal news, so the letter will not be too long. . . . I see very few of my old classmates here in Pittsburgh and have not heard from my old buddy, Ray Stringfield, for some time. Possibly his last letter which was published in *The Review* is still up to date for him. My job as honorary secretary in the Pittsburgh district keeps me interviewing young men from time to time and thus in touch with the Institute. . . . The members of my family are all well and happy, and Mrs. Casselman sends her best regards. . . . Looking forward to another reunion before we all get too old."

Boots Malone of Stamford, Conn., says: "I am sorry to be so tardy in sending my class dues. . . . I wish you as prosperous a New Year as possible under this New Deal of ours."

Seward Highley, on a new job, writes from 836 Euclid Avenue, Jackson, Miss.: "Since August 1, I have been down here in Jackson with Charles T. Main '76 building an ordnance plant. It is a powderbag loading plant. What with working ten hours a day seven days a week and keeping up with southern hospitality, I haven't had time even to write a check. The job is scheduled for completion May 1, but we are trying to beat that by a month at least. After that no one knows. . . . My best to you, and the sentiment is echoed by Helen. . . ."

Ray Walcott, at the Stauffer Chemical Company, a division of the National Sulphur Company, Inc., Bayonne, N.J., has the following to say: "As with all of us, time passes too rapidly. We should be glad to see you whenever you pass this way. Best regards to all the gang."

At the national time-and-motion study clinic held by the Industrial Management Society in Chicago in November, Carl Dunn delivered a paper with a discussion of "Some Methods and Policies Manage-

## 1915 Continued

ment Must Follow in Starting and Continuing a Time Study Program." Carl is vice-president of the Charles E. Bedaux Company of Illinois.

Bill Mellema, 1663 Beverly Boulevard, Los Angeles, sends this letter: "I am enclosing herewith my check for class dues. May I suggest that if you really want to find out how to collect class dues and contributions to the Alumni Fund you contact Gordon R. Hall, 140 Tremont Street, Boston, Secretary of the class of 1915 at Amherst College. You may not know that I was a student at Amherst College for one year before I came to Technology, and although I attended only one year I am still considered one of the boys over there. Gordon Hall writes one of the most interesting letters to class members that I have ever come across; and considering that contributors to the alumni fund amount to 85 per cent or more of the members of the class, you will realize that these letters are really effective.

"I do not know why, but there doesn't seem to be that feeling of fellowship among M.I.T. men that you find among graduates of other colleges. The local M.I.T. Club in Los Angeles hardly ever meets, and apparently a small group of self-appointed individuals decide who are going to be the officers and then go through the motions of an election by the steam-roller method. The result is that there are no meetings except on a few occasions when a prominent person is in town.

"I am still in the business of designing buildings but have not been able to get in on this enormous amount of work that the government is doing. If you can make some suggestions as to how to go about getting some of this work, I should appreciate it a great deal because it really is a shame for a fellow of my qualifications and ability not to be up to my neck in just this type of work for which I am eminently fit.

"I see Walt Rivers quite often. He is a contractor building a large amount of defense homes. Elwin Norberg is still assistant architect for the board of education of the city of Los Angeles in charge of the design of a great amount of school-work. I have not seen Springfield for a long time, but I believe he is devoting most of his time to teaching at the University of Southern California."

Remember the Alumni Fund. If you gave \$100, \$50, \$25, give it again! If you gave less than \$15, give at least \$15 this year but be sure to give and remember that whatever you give will not only 'Help Azel' but, a great deal more, will help Technology! — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline, Mass.

## 1916

An editorial in the New York *Sun* of February 3 had the following to say in connection with Walt Binger's work: "On the basis of what he saw in England last fall Walter D. Binger, Commissioner of Borough Works for the Borough of Manhattan, recently wrote in *Engineering News-Record* that except for the organiza-

tion of civilians for their own defense and first aid, civilian defense is 'straight engineering technology.' Mr. Binger further defines civilian defense as 'the maintenance, during and between air raids, of cities, towns and the means of transport in a condition as nearly normal as possible.' If this definition shocks some persons because it does not put the protection of civilians first, it may be, as Mr. Binger suggests, because they do not see that civilian defense has become an integral part of war.

"Some of the lessons that the British have learned cannot be applied here or need not be applied here at present; we shall work out the differences in time. We can apply the lesson which Mr. Binger says the British learned late: That engineers are needed to get results in civilian defense that cannot be expected from laymen. The President might well consider the advisability of filling by the appointment of a distinguished engineer the vacancy which will be created when Mayor LaGuardia relinquishes his duties. The Mayor believes that the administrative difficulties of the job come first, but if American cities have to cope with the actual job of civilian defense rather than the theoretical job, the practical difficulties will come first and some of the advantages of having an expert engineer in charge of the job may become more apparent than they now are."

The *Engineering News-Record* of February 5 carried a picture of Binger in which he had a large glass in his hand (probably contained water). The picture was captioned, "Borough Works Commissioner of Manhattan and chairman of the A.S.M.E.'s committee on protection of civilians in wartime." In the same issue was a photograph of Sam Ellsworth with the caption, "Army camp sanitation expert and consulting engineer of Boston."

R. E. Gruber, Vice-president of Merck and Company in Rahway, N.J., was written up in the January issue of *Made in America Monthly*. The magazine article concluded with these two sentences: "It is confidently expected that all domestic demands for medicinal and dietary uses will be met without reducing the deliveries of necessary vitamins to our allies under the Lend-Lease Program. When the story of this war is written, the contribution of the chemical industry to the effectiveness of the armed forces and the welfare and fitness of the civilian populations will form one of its proudest and most fascinating chapters."

We have further word of Joe Barker: He is now on leave as dean of engineering at Columbia and is special assistant to the Assistant Secretary of the Navy at Washington, D.C.

Your Secretary has the sad duty of recording the death of Donald E. Woodbridge, President of the Sachem Petroleum Company, Norristown, Pa. Don was one of the moving spirits at our twenty-fifth reunion last June. Those who attended will remember that he carried off the senior prize in tennis. He and Frank Hubbard of the Brewster Aeronautical Corporation put on a most entertaining

exhibition of doubles. Don was 46 years old at the time of his death and, as his wife, Dr. Helen Mary Woodbridge, wrote: "He was always laughing and joking and enjoying life with the keen, clean sense of absolute fair play he invariably brought to everything he did. It was wonderful that he never knew illness or suffering or old age or even had any warning of death, for he died very suddenly in his sleep from a subdural hemorrhage. He leaves a daughter Elsa, a senior at Bennington College; two sons, Joseph Eliot and Dudley Emerson, who are students at Princeton; and two younger daughters who are still in grade school. Dud hopes to spend a year at M.I.T. specializing in aviation engineering when he is graduated, provided the Army doesn't call him first." — JAMES A. BURBANK, Secretary, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, Associate Secretary, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

## 1917

W. Mack Angas, author of the interesting article "Before Fulton" that appeared in the February Review, is now public works officer at the Navy Yard, Charleston, S.C. His advance from commander to captain signifies much, especially to those to whom the status of captain in the Navy is fully appreciated.

Careful and rather extended consideration has been given to the possible effect of the war effort on our reunion plans. The only major change contemplated is the elimination of the usual Monday activities because of the shift of Alumni Day at the Institute from June back to the latter end of April on account of an accelerated program under which commencement comes earlier than in former years. It is felt that a meeting of 1917 from Friday, June 5, to late Sunday, June 7, with an opportunity to exchange views should be truly constructive and that the reunion should be held. We shall miss many of the members of the Class who are in war service, but we hope that a number of them will find it possible to go to New London for a portion of the time, at least.

— RAYMOND STEVENS, Secretary, 30 Charles River Road, Cambridge, Mass. PHILIP E. HULBURD, Assistant Secretary, Phillips Exeter Academy, Exeter, N.H.

## 1919

Despite the fact that the present struggle is occupying everybody's time in increasing amounts, the returns from your Secretary's mailing list have been exceptionally good. Among those who have written in are many who are completely absorbed in the defense effort. — John W. Meader has left his work with the New York Trust Company and has become special assistant to the Assistant Secretary of the Navy for Air, necessitating his traveling to San Diego on special business. John, who lives at 141 Kensington Road, Garden City, N.Y., has a wife and three children and would rather sail than do almost anything else for a pastime. — John O. Merrill of 118

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East Delaware Place, Chicago, Ill., is a partner of Skidmore, Owings and Merrill, architects and engineers. John is married and has three children — aged 21, 18 and 16. He travels from Chicago to New York and back once a month, and says that he's "just trying to help win the war, same as all other Tech men." — Hope Nichols Newcomb writes from 107 Atwood Avenue, Newtonville, Mass., that she is at home, trying to continue the responsibilities left to her ten years ago by the fatal accident of her husband, Raymond Newcomb. She has two daughters — Joan, 17, and Nancy, 14. In 1937 she spent three months in five European countries and in 1940 took an automobile trip to Minnesota. Her interests as an alumna have been directed toward Mount Holyoke College, where she spent three undergraduate years and received her degree. We appreciate Mrs. Newcomb's information.

H. F. Marshall of 103 Morgan Avenue, Palmyra, N.J., is advertising and assistant sales manager of Warren Webster and Company. His advertising is carried in The Review. Marshall was vice-president of the Technology Club of Philadelphia two years ago. He saw Charles A. Chayne at the Buick Motor Company in Flint, Mich., last summer. Marshall may be reached in New York every Wednesday at 95 Madison Avenue (phone Lexington 2-8611). — Carl G. Polson of 82 Vesey Street, Brockton, Mass., is assistant superintendent of distribution for the Brockton Edison Company. Carl is married and has two sons — 13 and 18 years old. He has been with the Brockton Edison Company for over 25 years. His hobbies are bowling during the winter and golfing during the summer.

The correspondence sent to Lansing M. Quick was returned with a note that he is not with the American Radiator Company. If anybody knows where we can reach him, your Secretary would appreciate having the information. [The files of the Register of Former Students indicate that Mr. Quick is now with the Alabama Power Company in Birmingham. — Ed.] — Carley H. Paulsen is a lieutenant commander in the United States Naval Reserve, has a wife, a daughter, and a son. We wish to thank his wife for having returned this information to us, as her husband is extremely busy. They live at 78 High Street, Hingham, Mass.

Edward Adams Richardson writes from 1102 Linden Street, Bethlehem, Pa., where he is doing special engineering on steel. He lives with his brother, George Atwell. We were sorry to learn that Richardson's mother died at his home on February 7 at the age of 84. Richardson hikes, reads, writes letters on economics, and works on inventions. — William R. Osgood is a material engineer at the National Bureau of Standards and resides at 3633 Ingomar Place, Northwest, Washington, D.C. — John P. Putnam of 535 Beacon Street, Boston, Mass., a research engineer, lives with his mother and sister and flies for a hobby. — Frederick E. Markus of 20 Park Avenue, Belmont, Mass., is an architect for schools,

hospitals, and so on; he farms for a hobby, is married, and has one boy. Before the war he spent four months in Europe investigating multiple dwellings.

Howard S. MacKirdy is a lieutenant colonel in the Coast Artillery Corps at Fort MacArthur, Calif. He has three big sons, aged 19, 20, and 21, all in college and all taking advanced Reserve Officers' Training Corps courses. — Wirt F. Kimball, who lives at 96 Payson Road, Belmont, Mass., is an industrial engineer for the Cambridge Gas Light Company. He is married and has a son 10 years old. He has been in touch with Alan Richards recently and indulges in stamps and first aid for pastimes. — J. F. Lavagnino of 15 Fresno Street, San Francisco, Calif., is an apartment-house owner; he is married, and his hobby is radio. — William M. Murphy of 97 Decker Street, Milton, Mass., is a structural engineer for the Hood Rubber Company of Watertown, Mass. He travels all over the United States, is married, has two daughters, and lists photography and radio among his pastimes.

Several changes of address have come to the Secretary's attention: Huron D. Corthell has moved from San Francisco, Calif., to 95 Cascade Drive, Mill Valley, Calif. — I. Paul Maizlish has moved from Hollywood, Calif., to 645 North G Street, Tulare, Calif. — Herbert C. Merrill's mail address has shifted from Rutherford, N.J., to care of Lloyd Brasileiro, Post Office Box 1665, New Orleans, La. — George Michelson's new business address is 38 Newbury Street, Boston, Mass. — Edward L. Sache lives at 51 Sawyer Avenue, Dorchester, Mass. — Victor N. Samoyloff is now at La Sierra, Abangarez, Costa Rica. — The new address for William H. Vogt, Jr., is 357 Bonnie Brae Avenue, Rochester, N.Y.

At a recent meeting of the Washington Society of the M.I.T., the following 1919 men were present: Joseph Kaufman, Francis O'Donnell, Edgar R. Smith, and James G. Strobridge. And the Worcester County Alumni Association meeting in December was attended by Roderrick L. Bent and Maurice E. Goodridge. — EUGENE R. SMOLEY, *Secretary*, The Lumus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. McCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston, Mass.

## 1921

"Remember Pearl Harbor" has even greater appeal for those who came to the reunion last summer, living over old times with Harry P. Field, VI, of Honolulu, and learning about modern ones in the Paradise of the Pacific. Harry and his family were in the minds of many on December 7, and with considerable relief we report that they are unharmed and well. Harry has written a particularly welcome letter, which says in part: "Nothing much has happened out here since I saw you and the 1921 gang last summer in New London and Boston, except that on December 7 we had a lot of Japanese tourists drop in on us uninvited. Their bad manners rather upset us, and so we are

brewing a special brand of Wild Aloha just in case they have the poor judgment to return.

"I was asleep at the time the tourists called and was awakened by a shell which whistled over our house. The interesting thing to me was the absolute fixation in the minds of all Americans that the thing couldn't happen. The blow was so great that it took a very appreciable time before we could either think or write clearly. Fortunately, practically none of our utility property was damaged and the whole island is going ahead under forced draft in our effort to make up for lost time. With the war came the blackout and the problem of what to do for amusement in the dark. Do you remember the course in vise and benchwork in the Fenway and the extracurricular work in the Back Bay, practicing post office and sardines? Well, you never know when a college training can be put to good use. I still find myself waking up in the middle of the night, laughing at some of the thousand and one stories Bill Timbie umpired at the Griswold. Paul Rutherford's 'Our Ocean' might fit the Pacific just now.

"Tell the gang to keep up their power factor and entropy so the ships and planes will roll out fast enough to prevent any interruption of our plans to hold the twenty-fifth reunion in Honolulu." — Harry is manager of the commercial department of the Hawaiian Electric Company, Ltd. He and Mrs. Field, Harry, Jr., 17, and John, 15, make their home at 49 Kawanakoa Place, Honolulu. Much aloha (the regular brand) from all of us.

Dana E. Kepner, XI, especially picked 1921 Blake Street, Denver, Colo., as his business address. His major activity is photographing the two youngsters, although he admits to occasional design and installation of water works, sewage, and power equipment. — John D. Crowley, II, is the owner and general manager of the Equipment Engineering Company, 52 Whitney Avenue, New Haven, Conn. The organization is active in making special material-handling and storage equipment. John lives in Orange, Conn., where he indulges in his hobbies of sailing, fishing, and farming.

Howard L. Vickery, XIII-A, ship production expert and vice-chairman of the United States Maritime Commission, has been nominated by President Roosevelt for the promotion from captain to the rank of rear admiral. He is senior assistant to Rear Admiral Emory S. Land '07 and is in charge of the commission's big merchant shipbuilding program, which calls for the construction of more than 1,200 ships in the next two years. Much of the credit is his for carrying out this program, which is far ahead of schedule. Besides a rear admiral, the class rolls list three brigadier generals, Harvey C. Allen, Richard Donovan, and Maxwell Murray. Another promotion has been announced in the change from major to colonel for James E. Baylies, VII, who has been assigned to the Office of Surgeon General, Washington, D.C.

Victor S. Phaneuf, II, a captain in the Corps of Engineers, has been assigned to

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duty as the post utilities officer at the army air base, Manchester, N.H. Vic has had a varied and interesting industrial experience in yarn manufacture, machine design, consulting, and building construction. As a reserve officer, he was called to active duty for the Civilian Conservation Corps program from 1933 to 1937 but thereafter returned to his building construction duties until last year when he was again summoned for active duty. Vic lives at 126 Concord Street, Nashua, N.H. He is married and has a son, Richard, who is 13 years old.

The Register of Former Students has inquired if anyone knows the present address of Llewellyn B. Griffith, I. Mail has been returned from his last address, 1413 4th Street, Corpus Christi, Texas. Please address the Register directly if you know Lew's whereabouts.

Frederick S. Dellenbaugh, Jr., VI, is at the Institute, where his activities are directed toward the work of the National Defense Research Committee in connection with the M.I.T. Radiation Laboratory. — Antonio H. Rodriguez, X, has so changed the spelling of his last name. He is president of the San Agustin Sugar Corporation, Havana, Cuba.

Reported changes in addresses are as follows: Robert B. Frost, X, 310 Main Street, Demopolis, Ala.; Charles MacKinnon, II, 75 Warren Avenue, Plymouth, Mass.; Lewis W. Moss, XV, New York Central Depot, Mount Carmel, Ill.; Donald S. Piston, VIII, 127 Cornell Street, Fresno, Calif.; David J. Baker, I, Box 333, Lenox, Mass.; Paul L. Deylitz, Elwood Ordnance Plant, Joliet, Ill.; Glenn H. Easton, XIII-A, 131 Alvarado Road, Berkeley, Calif.; Laurens M. Hamilton, XV, 220 Clarke Avenue, Palm Beach, Fla.; Edward W. Jackson, IX-B, 64 Hawthorne, Grosse Pointe, Mich.; Donald D. James, XV, 1609 Congress Avenue, Austin, Texas; C. Harry R. Johnson, II, 439 Hollywood Drive, Monroe, Mich.

Also removed to new locations are Irving D. Marshall, VI, 2042 North Irving Street, Arlington, Va.; Grant L. Miner, Jr., I, 1741 Grove, Denver, Colo.; Maxwell Murray, II, United States Army, Honolulu, T.H.; Frederick F. Olson, III, Hudson Road, Sudbury, Mass.; Charles E. Thornton, VI, 2 Rangeley Road, Winchester, Mass.; Raphael Van Neste, XIV, 1130 East Ellsworth Avenue, Denver, Colo.; Myer Weisman, I, 2101 Beekman Place, Brooklyn, N.Y.; Sydney S. Winslow, Headquarters 4th Air Force, San Francisco, Calif.; William H. Young, Jr., II, 425 15th Avenue, Paterson, N.J.; Yssel Y. Young, VI-A, Selma, Kansas.

Relax from that steady "V" drive by sharing your news with your Secretaries — any kind of note, but write it now. — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Telephone and Radio Manufacturing Corporation, 67 Broad Street, New York, N.Y.

## 1922

As these notes are being written late in February, the reunion committee has met

and has decided to hold the reunion as originally scheduled at the Sheldon House, Pine Orchard, Conn., if satisfactory arrangements can be made. The dates will be June 5 to June 7. The festivities will start after lunch on Friday and will end after breakfast on Sunday. A preliminary survey indicates that a goodly number will attend in spite of war conditions. Charles E. Locke '96, Secretary of the Alumni Association, has commended our decision to go ahead with the reunion.

Front-page news in the war production picture has been Al Browning's return to Washington to become deputy director of procurement, with supervision of buying for the Army. *Time* magazine of February 9 carried Al's picture along with the account of the appointment, which was made by Donald M. Nelson. In case you did not know it, Al is a "slick handsome" businessman, according to *Time*'s able reporter. Browning resigned as president of United Wall Paper Factories, Inc., to take up the work in Washington.

Appearing before a Congressional committee early in February, Donald F. Carpenter, Vice-president of the Remington Arms Company, said in part, "There is one mistake Remington will not make if it is humanly possible to prevent it: that is, to fail for any reason whatsoever to make all the small arms and all the ammunition that may be needed by the men in our front lines who are doing the fighting." We know that when Don makes a statement like this, the results will be forthcoming. More power to you, Don, and more and more ammunition.

The greater part of a letter written on February 5 to Yard Chittick by H. Richard Aaron, Stanford Court Apartments, San Francisco, Calif., follows: "After all of these years during which I have conscientiously read *The Review* regularly but have never contributed to the class notes, I think it is about time I wrote you a line. You are probably not aware that I left the United States many years ago and resided in Singapore from 1928 to 1941. I returned to the United States about six months ago with my wife and two children. I still maintain my office in Singapore, where I have all my interests, so you can imagine that I am not in a very happy mood at the present time.

"I am now a lieutenant in the United States Naval Reserve and am on active duty with the United States Navy, at present being stationed with the supervisors of shipbuilding, United States Navy, in San Francisco. I always read with interest the '22 class notes and look forward to seeing more and more names of our classmates entering the armed forces so as to hasten our day of victory. Congratulations for the excellent way the '22 class notes have been written up for 20 years."

When Aaron is able to get back to a reunion, what a story he will have to tell — 13 years in Singapore and then active duty with the Navy. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. C. YARDLEY

CHITTICK, *Assistant Secretary*, 77 Franklin Street, Boston, Mass.

## 1923

It is only natural to suppose that at a time like this Technology men are so busily engaged both in direct defense activities and in making adjustments and changes in businesses and projects for civilian use that they would find it burdensome to carry on extensive correspondence of solely a "news" character. I am not going to hide behind that facile supposition, however, and claim that the shortage of '25 news is due entirely to the present emergency. In the course of the two or three business trips and the one vacation trip that I made in 1940 and 1941, I hoped that I had organized groups which would serve as practical sources of news without too much follow-up correspondence. But this hope has not come true, and since I have not had time to carry on such a correspondence, it is only to be expected — though hardly fair to the readers of these notes — that the formation available should dwindle insomewhat. It takes from three to five outgoing letters to bring one in reply, and an unsolicited piece of news, like Frank Klein's account of his removal from Maryland to New Jersey, is so rare as to be an occasion of great rejoicing.

I have received the following notices from the headquarters of the First Naval District in Boston: Francis (there's that man again) McGinnis, VI-A, has been commissioned as a lieutenant in the United States Naval Reserve and will act as an ordnance officer in this district. — Henry Brousseau, X-B, has likewise received a lieutenant's commission in the Naval Reserve. The exact nature of his duties is not stated, but since his civilian position was that of technical sales manager of the General Latex and Chemical Company in Cambridge, he, too, may have something to do with ordnance or supply. Unless we hear a protest from Harry himself, we shall let this guess stand.

Ed Piepho is still in Detroit, presumably with the Detroit Edison Company, his last reported employer, although his home address has been changed to 14930 Greenview Street, that city. — John W. Sibert, Jr., formerly of Augusta, Ga., has moved to the Canal Zone, where his address is Box 961, Diablo Heights. In view of the construction work going on there, coupled with his affiliation with Course I, it is logical to believe that he is taking an active part in such work. Another Course I man reporting a change of address is George O'Brien, who now lives at 16219 Northlawn Avenue, Detroit, Mich., rather than in Chicago, where he was a special agent of the division of investigation of the P.W.A.

Julien Edgerly, XV-2, is now a lieutenant and continues at the Naval Training Station at Noroton Heights, Conn. — Count Blonsky, III, may now be reached at Post Office Box 1329, Las Vegas, Nev., rather than at Phoenix, Ariz., his last reported address. I know that he should greatly appreciate hearing from other III

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men, and I hope that they will take this hint and get in touch with him.—  
HOLLIS F. WARE, *General Secretary*, 3 Aquavia Road, Medford, Mass. F. LEROY FOSTER, *Assistant Secretary*, Room 7-121, M.I.T., Cambridge, Mass.

## 1926

A recent visitor to the Institute was Wilfred Carter, who is now associated with the United States Office of Education in Washington, working on the nation-wide trade school training program which is being sponsored by the government.—F. Trevor Hogg, who was graduated from Princeton in 1917 and from the Institute, Course IV, in 1926, has been sworn in as a commissioned officer in the United States Naval Reserve with the rank of lieutenant commander. He is a member of the architectural firm of Hogg and Campbell in Boston.—Notice has been received that Brigadier General Wilmot A. Danielson's title has been changed from brigadier general to General Danielson.—Bill Rivers, whose address prior to his visit to the States this summer was Calcutta, India, is now at the Sind Club, Karachi, India. When Bill went back early this fall, he was hardly expecting present developments in the Far East.—Harold R. Wells has been promoted from lieutenant colonel to colonel.—JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

## 1927

Because only a small percentage of those who returned their cards in response to the recent questionnaire indicated they would like to have a reunion this year, your committee has voted to postpone the proposed fifteenth reunion. As conditions are so unpredictable, the committee felt that by the time June rolls around there would undoubtedly be a further shrinkage in the number of those who indicated a desire to attend a reunion this year.

To engage a hotel with any sort of a fixed guarantee would be rather hazardous in these circumstances. Hence the suggestion has been made that we wait until the middle of May and then assemble the committee to determine whether an informal reunion might be worth while. If at that time it is decided that a sufficient number might attend, notices will then be mailed only to those who have already sent in their return cards advising that they probably could attend a reunion this year if one were to be held—plus any others who may advise Jim Lyles in the meantime that they would like to have their names added to such a list. These notices would state that an informal reunion will be held over the week end of June 13 at Ye Castle Inn, Saybrook, Conn., if it has the capacity at that time or at some other convenient hotel if Ye Castle Inn is not available. No reservations or guarantees will be made.

One thing that has been definitely decided, however, is that we will have a reunion of all available members of the Class on the day of the annual Alumni

Dinner on April 25. We will meet at the University Club at 4:30 P.M. to swap yarns, discuss the affairs of the nation, the progress of the war, the possibility and desirability of having an informal reunion in June, and we might also have a beer or two. We will proceed from the University Club to the Hotel Statler for the banquet at 6:30 P.M. Bob Wise has very kindly invited us all to his home in Brookline after the banquet, to view the movies which he took of the gang at our tenth and to carry on the reunioning. It looks like a big evening; so all members of the Class who can be on hand are strongly urged to attend.

The Assistant Secretary learns from unimpeachable sources that the Secretary (whose class notes in recent months have been few and far between) has turned into a promising young author. He understands that Raymond F. Hibbert is the author of a new book, entitled, *Mr. Meanie and the Bunny*. We have not yet been informed as to what printing house has been successful in bidding for the job of running off the thousands of copies that will doubtless be in demand from the reading public which is so well aware of Hibbert's talents. The exact nature of the novel is likewise unknown, but it is presumed to run along the general lines of some of Hibbert's earlier works.—RAYMOND F. HIBBERT, *General Secretary*, Boots Aircraft Nut Corporation, New Canaan, Conn. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

## 1928

Harold W. Bialkowsky, XIV, visited the Institute recently—the first time back at Technology since our Class was graduated. He is now employed as technical director of the Everett pulp mill of the Weyerhaeuser Timber Company, Everett, Wash., and came east to attend the meeting of the Technical Association of the Pulp and Paper Industry held in New York City. After graduation, Harold worked until 1930 for the American Writing Paper Company, Inc., in Holyoke, Mass.; for the next three years he studied at the Institute of Paper Chemistry in Appleton, Wis., receiving a doctor's degree in 1933; from then until 1940, when he headed to the Far West, he was employed by the Gilbert Paper Company in Menasha, Wis. Harold has two youngsters, a boy, six, who is headed for Tech, and a girl, three.

Friends of Dud Smith, XV, will be happy to know that he, his wife, and two boys are safe in Honolulu. A Christmas card from Dud, dated December 12, five days after the Pearl Harbor disaster, is interpreted to mean that all is well.—News is scarce. If you fellows will drop Ralph Jope or me a line, we'll try to have notes appear more regularly.—GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

## 1935

The one wedding to report is that of Lyllian Moses to Maxwell Lewitus, now a lieutenant with the First Medical Bar-

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talion at Fort Devens, Mass. There are three engagements: Dorothy Bergren to Roderic D. Smith, Elizabeth Gale to Lawrence C. Hall, and Nancy Parker to Samuel T. Orton, Jr.

The palm for giving this column a respectable size belongs to Ed Loewenstein, whose letter is dated January 23, from Camp Ulupau, T.H.: ". . . A year ago last September I took a short vacation from my architectural business in Chicago and went to New York to take a cruise on the good ship *Kitty*, belonging to Tuffy Emery '34. I arrived in New York and called up Larry Stein '34, as I had originally intended to take in the World's Fair. Need I say that an hour later I had shed my city clothes and was on the way to Montauk Point with Tuffy, Larry, Al Rogowski '34, Johnny (Iron Man) Newbegin '34, and several others who have slipped my mind at this sitting. We had a real trip to Woods Hole, Nantucket, and New Bedford. After this, I returned home to recuperate until the end of April, 1941, when I got my orders to report for active duty at Fort Bragg. From there my outfit went on a small firing maneuver to Myrtle Beach, S.C. I was transferred to Camp Davis, N.C. on the 1st of June. While I was there, Tuffy popped in for a night, and we had another regular reunion.

"After this, we were shifted to maneuvers near Hoffman, N.C., where we learned a great deal and had generals for lunch everyday. My temporary title was assistant communications officer, which meant that I sat up all night at a plotting tent, broadcasting warnings to combat units. On one occasion I arrived at the 68th Coast Artillery and learned that our former crew captain, John Webster Westfall '34, was a member of the command. I immediately found his tent, as it looked like the Pullman after the Marietta trip, but no Johnny. Later I took a special 150-mile trip to see him, but he was still missing. At Camp Davis I saw Paul Daley, who is married now. . . .

"We have the best battery in the whole regiment and got an excellent in combat efficiency before we left the States. Prior to leaving, I spent a week end with Larry Stein in Williamsburg and then immediately entrained for Frisco, from where I arrived in Hawaii. . . . This is a beautiful place and has a wonderful climate. We have complete blackout, prohibition, and only three-hour leaves. Also, there is nothing to do outside of army work, no one with whom to do it, and no transportation anyhow, as gas is rationed. I'll send you all the details of our thrilling trip over when I get back; meanwhile, architecture will have to get along without me. I certainly wish more members of the Class would write to The Review so we could all hear about them. Easy all. . . ."—Well, Ed, we anticipate hearing all the details as soon as you can send them. Altogether it looks as though the boys will have some tales to tell at our next reunion, which, let's hope, will be in 1945.

As you will notice below, a lowly substitute is conducting the column until we

1935 *Continued*

locate another Secretary to fill Bob Granberg's shoes. I'd like to record here the gratitude of our Class to Bob for the swell job he did for us over the past seven years.

— WALTER H. STOCKMAYER, *Acting General Secretary*, Department of Chemistry, Columbia University, New York, N.Y.

RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road, North, Chestnut Hill, Mass.

## 1936

Reversing the usual procedure, we'll start this month's column with an account of the members of the Class in the armed services. John Valtz is now a lieutenant, junior grade, in the Naval Reserve, Civil Engineering Corps. He is a naval inspector at the Hingham ammunition depot. Harold Brown holds the same rank as an ordnance officer and has received orders for active duty at Fort Schuyler in the Bronx. Edgar Pettebone is an ensign in the Navy, as is Bill Tier, who has been assigned to the Naval Ordnance plant in Centerline, Mich. In the Air Corps, Julius K. Lacey is a major at Maxwell Field, Ala. and William L. McCulla, also a major, is at Wright Field, Ohio. Roman Ulans is a lieutenant at the Headquarters of the Signal Corps at Camp Crowder, Mo. Fred Assman's address is just 53d Medical Battalion, Army Post Office 813, care of the Postmaster, New York City, and as to where Fred actually is, your guess is as good as mine.

On the industrial front, we also have a little news about some of the Class. Noran E. Kersta, who was associated with us for a while, has been appointed manager of the television department of the National Broadcasting Company. Since 1935 Kersta has been employed by N.B.C. in connection with the business aspects of television. Bob Wead is with the United Fruit Company in Guatemala. Milt Dobrin is still with Gulf Research and Development Company, but has been transferred to Clinton, Okla. Stan Johnson is with the United States Steel Corporation in Washington, D.C. And here is word from three former biology students of Course VII: Doug Woodward, who is with the United States Geological Survey in Boise, Idaho; Milt Silverman, who is in the department of biochemistry at the University of Chicago; and Clarence Cohn, who is a doctor at the Michael Reese Hospital, also in Chicago.

It doesn't look as though the crop of June weddings will be as large as usual because there are only two engagements to announce: that of Elizabeth Smith to Morril B. Spaulding and that of Dorothy Brushaber to Phil Ober. Phil is employed by Hollingsworth and Whitney in Waterville, Maine. — I want to repeat three announcements which I received recently and which pleased me very much. First is the marriage of Frances Dankner to Leo Kramer on February 1. The most interesting Christmas card which I received read: "Eve Odiorne joins Louise and Dick in wishing you Joy. December 20, 1941. 6 lbs. 10 ozs." And another announcement which arrived shortly thereafter told of the birth, on December 26, of

Robert Vernon Osgood, weight seven pounds six ounces. Our heartiest congratulations to the proud parents. — ANTON E. HITTL, *General Secretary*, West River Road, Grand Island, N.Y. ROBERT E. SAWYER, *Assistant Secretary*, 35 Lawndale Street, Belmont, Mass.

## 1937

Well, fellows, from the looks of things we shall be fortunate if, around the time we normally would be enjoying ourselves at reunion, we can take enough time off to get together even in small groups. As the situation shapes up now, we shall have a key dinner in Boston, with other reunion dinners taking place at strategic places where two or more '37 men can assemble. Probably these meetings will coincide with the Alumni Day Dinner at the Statler in Boston on April 25.

Bob Thorson, I, is now a second lieutenant stationed in Savannah, Ga., 226 East 56th Street. He writes: "Our column in The Review is the first thing I look for, but who am I to say anything about how small it is? I hope this note helps a little. First, news of a few of the fellows whom I have heard from in one way or another: Joe Smedile, I, a regular army man, is now a captain and area engineer at Camp Stewart, Ga. Joe spent two years in Panama right after school and has been stationed in Georgia ever since then. Another Course I man, John Fellouris, was working for the Coast and Geodetic Survey, but is now a first lieutenant in the Army and, I believe, is stationed somewhere down South. [According to the Register of Former Students he is with the United States Engineers Office, Custom House, Charleston, S.C. — Ed.] Wally Wojtczak is still working in New Haven, Conn., for the Dwight Building Company.

"Ralph Webster, I, is now located in Winchester, Mass., and is working for a dry dock company. Ralph became the proud father of a baby girl, Susan Jane, just about a year ago. Irving Tourtellot, I, is in Canada at present. [Irving and Louise are now boasting their second boy, and Louise and the two boys have joined Irving in Canada. — Sec.] A Christmas card from Howard Marshak, I, of Hempstead, Long Island, revealed that he is now married. Norman Birch, III, is still living in Ramsey, N.J., or is unless the Army has called him in the last month. Bob Brauer, X, lives in Alton, Ill., and is still with the Standard Oil Company of Indiana. Bob is the father of a boy about a year and a half old. About a year ago I heard from Eric Moorehead, I, who was with the Ferro Concrete Construction Company. He joined them on graduation and has been living in Cincinnati.

"For myself — I joined the Texas Company on graduation and worked in different terminals along the Atlantic Coast until my transfer in August, 1939, to their Lockport refinery in Illinois. My father died in February, 1940, and I resigned from the Texas Company to go back to Medford, Mass., in order to manage the family business, the Thor

Roofing Company. On December 1, I entered the Army and was sent to Savannah, where I am connected with the United States Engineer Office."

Dick Young, II, who is now in Birmingham, Ala., 3528 8th Avenue, South, writes: "From January 4 to 10, I was in Washington on priority business, and while there I saw or spoke to several of the old crowd. The first evening I spent with George Wemple — beg pardon, Lieutenant Wemple. G. B. hangs out at the University Club, and I sincerely believe that the difference between his present life and that at school when he was in R.O.T.C. is very small. Living in the club is so similar to that in the clapboard shack on Memorial Drive, and prancing around in olive-drab, leather reins and bridle, semishined buttons, and size 14 AAAA brown brogues smacks of the familiar. But — and this fact bears considerable investigation — surrounding his desk on the third floor of the Social Security Building where he handles the controls are fully six gals within arm's reach. The Army may be at war, but G.B. doesn't seem to be mad at anybody. Don't go to lunch with him. It's the basement of the S.S.B. or else. That's where they all go; yes, every mother's son in Washington, 50,000,000 strong. Bill McCune, XV, dropped into town while I was there, but he was in for just one morning. All we got out of him was hello and good-by. He was off again to Cambridge. After four years we get within eyesight. Yes, we could look across the street and see each other, and all that passes is a one-minute phone talk. Same thing happened with Ed Hobson, X — passed a few words with him on the phone and Hobby was off again, telling the generals which foot to put forward next.

"If any of you have wondered what happened to Bill Gibson, XIII-C, you can find him at the American Embassy, Rio de Janeiro, Brazil. Drop him a line. He's so far away, it's like writing to Santa Claus."

See you later this month. Keep 'em flying! Keep 'em rolling! And keep their faith! — WINTHROP A. JOHNS, *General Secretary*, Route 1, Bellemead, N.J. PHILIP H. PETERS, *Assistant Secretary*, 10 Babson Park Avenue, Wellesley Hills, Mass.

## 1940

Dave Morganthaler visited us a few weeks ago. He is stationed at Langley Field with the 21st Engineers. This regiment is training to build and maintain new airports. Dave seems to be particularly interested in the work that he is doing, in spite of its being mainly civil engineering, eh Dave? — Seth Levine left his job as industrial relations counselor to a firm in Boston last August and is now with the post-defense division of the Bureau of Labor Statistics in Washington. Seth writes that Johnny Joseph is a lieutenant at Fort Monmouth, N.J., teaching hundreds of soldiers to "touch type." Dan Karp is still with Karp Metal Products but is expecting a commission in the Navy soon, and Dave Jacobson is

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with the office of Defense Housing Coordinator in Pennsylvania.

Alvin Guttag tells me that Barrett Taft is working as a metallurgist at Pratt and Whitney Aircraft in East Hartford. Sam Breck is working at United States Rubber Company in New Jersey. Ken Lish is doing plant design in Maryland. Harold Robinson is working for a consulting laboratory in New York, and Arnold Arch is now stationed at the Chemical Warfare Service plant at Niagara Falls.

Paul H. Lamson has been sworn into the Naval Reserve and has orders to report to the Bureau of Ordnance for active duty—Janet C. MacDonald and Gordon W. Blackmer were married in Boston in January. — What has become of Dan Crosby? Will someone stir him a bit? He used to send me considerable news about some of you fellows. Calling the long distance, feller. And while I'm calling, it might as well be unanimous; Class of '40, let's hear from you. — H. GARRETT WRIGHT, *General Secretary*, 44 Main Street, Hilton Village, Va. THOMAS F. CREAMER, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

#### 1941

George W. Clark, who is still unattached and somewhere in New York City, is doing signal corps work, of course. He writes of the slow but persistent scattering of our signal corps lads: Art Gingrande, Johnny Murdock, Jack Renner, and Norm Kridel '40. Exact locations are no longer things to broadcast at times such as these, so we'll not dig too deeply. George has bumped into Arnold, Kaiser, Henry Burr, and Ralph Millet, all serving under the crossed flags. Incidentally Dick Gill, B.C. and M.I.T., is in New York as weather officer. Les Corsa has left American Can Company for the Lederle Laboratories, Inc.

Johan Andersen includes a goodly bit of news in a swell letter from his farm in Hopkinton, Mass. John is doing industrial design in defense work in South Boston. Home for John and Kay is out in the country more than a mile and a half from the nearest neighbors. How envious we are. To quote John: "Jim Thornton was working for Package Machinery Company in Springfield, Mass., but right at Christmastime the Army stepped in. He is in some fort in New Jersey, and I haven't heard from him since then."

"Bill Hooper, after a long period of waiting, finally got a transport to Panama, where he is affiliated with the Signal Corps. On the other hand, Frank Storm is still in Washington with the

Ordnance Department, living very well in a mansion, according to last reports. (We hear all enemy agents have left the capital for lack of hotel room.) John Sexton is in Springfield with the Hartford Ordnance District Office as a sort of survey man, working on places to get various material. He says the job is most interesting—he drops in every now and then on a week end.

"Dick VanTuyl is still working for Sperry Gyroscope and is living at his home in Wantagh, Long Island. He is about to head a section of statisticians in the new Nassau plant. Carl Goodwin and Dick Bartlett are working in Cleveland with the Aluminum Company of America. They are having a grand time enjoying western hospitality. Howie Morrison is also in the West at a DuPont powder works. The story of his being searched for concealed weapons in a Chicago night club is worth hearing some time, but it's too long for now.

"Jay Jerome is stationed at Fort Devens now, if the underground communication system doesn't lie. Ray Berry is a lieutenant at Wright Field in the matériel division. Bob Youngquist is doing experimental work at Annapolis. Bill Folberth is still working at Tech some three days a week and helping out Rolls-Royce, Inc., by inspecting motor bearings. Remember our Class Agent; it's about time we started to dig again before we get out of the States.

"So you see we Fijis are still being pushed around. The gang has held together quite well. We have a round-robin letter revolving at the rate of one revolution in six months. Since it takes in 12 fellows, we get 12 letters to read for each one written."

Charlie Whitney has landed at Washington, D.C., in the Office of the Quartermaster General, Water Transportation Division, as we predicted in the January Review. Charlie says he was quite lucky to pick up Johnny Gilbert's room. Johnny has gone out to the West Coast for six months with the United States Maritime Commission. Charlie works on the maintenance and repair section for harbor craft. Bigger things are around the corner.

Rog Finch is married and settled for awhile at Camp Lee, Va., where we expect to join him before long. The list of married Quartermaster officers from M.I.T. at Camp Lee is mounting. Our former roommate, Mert Richardson, married Nancy Linda Boyle in Reading, Mass., on February 21. Our best wishes are included, and we expect a visit on the way back to Lee. Found it nigh impossible to

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get upstate to be present at the occasion, as did our present roommate, Weedon. He and Fuhrer just popped in by the way, and it is 1:10 A.M. Things haven't changed much.

Dave Shapiro tells us of his transfer to Chicago as signal corps inspector. Warner Knight is working in Philadelphia for the Container Corporation of America. Warner tells us he almost fell off his seat when he saw yours truly stagger around the track in the service men's relay race. Well we won gold medals for a first place—never mind the times! — A trip back to Cambridge brought us in contact with Nathan Owen, finishing II-A's fifth year before joining the Ordnance Department; Irv Liener, teaching and studying; Ernest Little, teaching fellow; Johnny Bone, at Fore River; Sam Solar, making billiard balls; Charlie King, researching for Chemical Warfare; Norm Shapira, home for a few days' leave; Ted Ferris, Stan Marple, George White, Leon Flanders, George Newton, Stan Webber, Rog Robertson and Bob Mayer; Hite and Alfred are still on defense work—hush, hush. It was like old-home week.

Dick Owen is doing marine transportation work for our Uncle Sam, and everybody not mentioned is in the Army, Navy, Air Corps, or Coast Guard.—Adolf Bertsch, after finishing up at the Institute in February, threw us a few bits of news as he dashed out of Tomcat Manor to join the Air Corps. He tells us that Norm Vandervoort left the Office of Production Management, entered the Army, and got himself engaged to Betty Mason of Ridgewood, N.J., all at once, practically. We're still awaiting news from those two traveling classmates of ours, Jack Kriz and Harold Dato. Kriz last reported from Manila that he was on his way to Hong Kong, and Dates was on his way to Pearl Harbor—all before the shooting started, of course.

Pete Gilmer has left the International Telephone and Telegraph Corporation to enlist in the Army. J. Lester Klein is in Syracuse with the Crucible Steel. Herman E. Gabel, Jr., and Mrs. Gabel are living in Hamlet, N.C., where Herman is attached to the 175th Signal Repair Company. Irwin Goldberg has resigned from his job with the Pratt and Whitney Company of Canada to take a commission as pilot officer in the aeronautical engineering division of the Royal Canadian Air Force. — STANLEY BACKER, *General Secretary*, 46 Bicknell Street, Dorchester, Mass. WILLIAM R. AHRENDT, *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.



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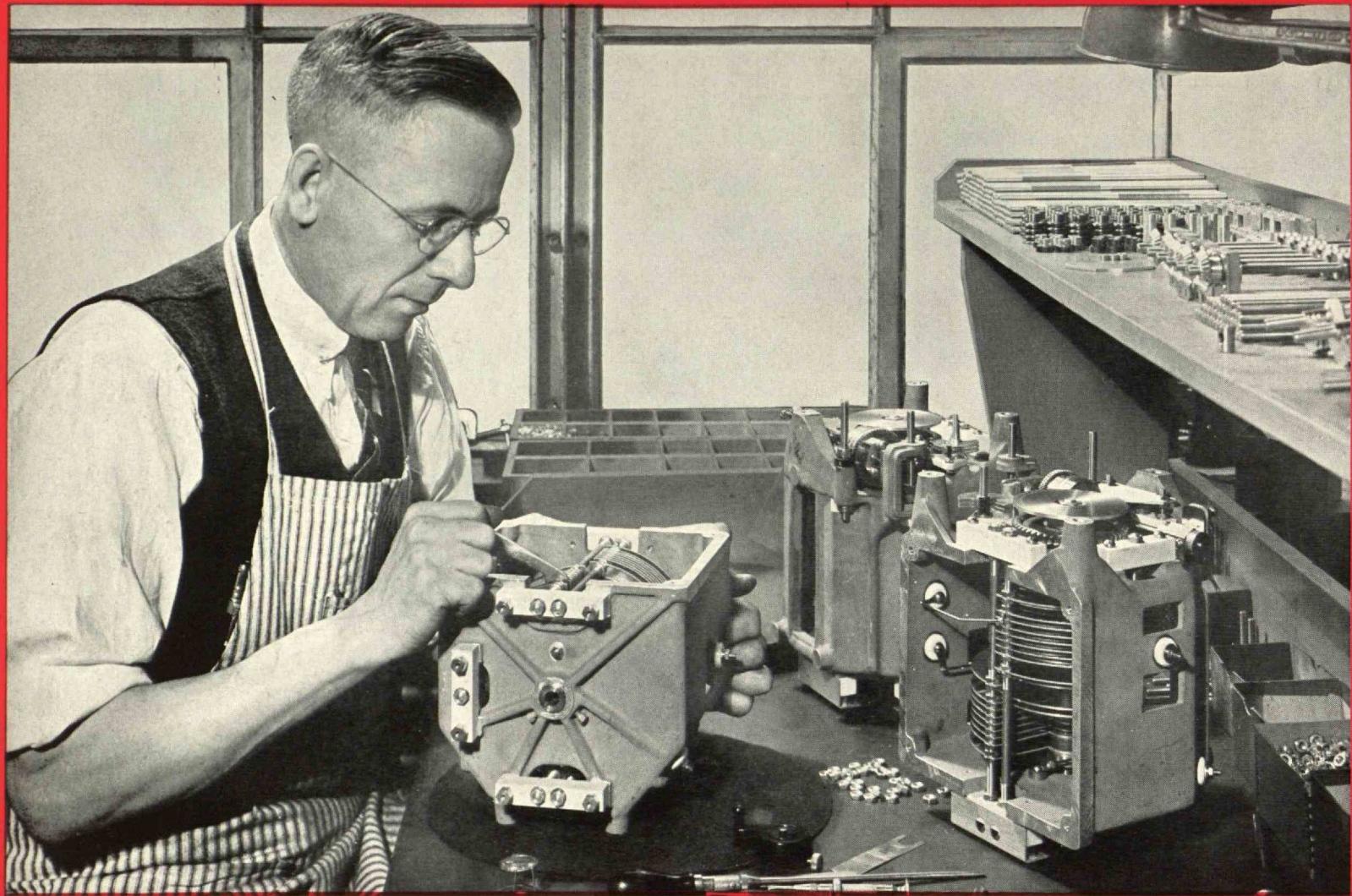
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## CRAFTSMEN . . . 1942 STYLE

**B**ELYING the popular conception of a craftsman . . . a long-bearded gent whose great-grandfather also made fine watches . . . is the modern shop worker whose mechanical skill equals, and often exceeds, that of the Old World mechanic. Even in this modern age of mass production there is more fine craftsmanship shown than the Old World ever dreamed possible.

General Radio, in the manufacture of precision electrical measuring apparatus, has its share of craftsmen whose fine mechanical skill is of the highest order. Take P. A. Sharpe, for example. He came to General Radio in 1924 to assemble intermediate-frequency transformers. Then in 1926 he graduated to the assembly of broadcast-receiver variable condensers. After a brief session with hot-wire meters, thermo-couples and string oscillographs . . . all with enough delicate parts to try the patience of a saint . . . Sharpe returned to condenser manufacture.

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Percy Sharpe is typical of the large majority of General Radio men, most of whom have been working for some years on only a few instruments. In the interest of quality G-R has limited its production to small lots so that each man will concentrate on one or two instruments at a time. As a result G-R workmen know how to assemble G-R equipment rapidly and accurately no matter how complex the job is. In the assembly department G-R has never employed inexperienced and unskilled workmen.

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